# THIS WEEK'S National Petroleum NEWS

## Index to Coming Meetings

*Minnesota Division, Northwest Petroleum Association*, Radisson Hotel, Minneapolis, Jan. 14, 15.

*Society of Automotive Engineers*, Book-Cadillac Hotel, Detroit, Jan. 19 to 23.

*Wisconsin Petroleum Association*, Pfister Hotel, Milwaukee, Jan. 21, 22.

*Oklahoma Petroleum Marketers Association*, Huckins Hotel, Oklahoma City, Jan. 23, 24.

*South Dakota Independent Oil Men's Association*, Alonzo Ward Hotel, Aberdeen, S. D., Jan. 27, 28.

*North Dakota Division, Northwest Petroleum Association*, Dacotah Hotel, Grand Forks, N. D., Jan. 29, 30.

*Ohio Petroleum Marketers Association*, Neil House, Columbus, O., Feb. 24, 25, 26.

*Michigan Oil Men's Association*, Hotel Statler, Detroit, March 11, 12, 13.

*American Association of Petroleum Geologists*, Gunter Hotel, San Antonio, Texas, March 19, 20 and 21.

*American Petroleum Institute*, division of refining, semi-annual meeting, Hotel Statler, St. Louis, Apr. 15, 16.

*American Petroleum Institute*, division of marketing, semi-annual meeting, Mayo Hotel, Tulsa, May 12, 13.

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*Photo by Blank-Stoller, Inc.*

P. M. MISKELL, head of refining activities of the Empire Oil & Refining Co., has devoted 25 years of his life to the oil business. As a lad "Pat" started out as a railroader carrying messages for the Pennsylvania railroad. After 12 years he switched to a bank and five years later entered the oil business with the Barnsdall interests in Ohio and Pennsylvania.

Fifteen years ago Mr. Miskell came to Oklahoma as manager of the American Refining Co.'s plant at Okmulgee. When the plant was purchased by the Cities Service interests in 1916 Mr. Miskell was retained as general manager. Since then the Doherty refining properties in the middle west have been enlarged by the addition of plants at Ponca City and Cushing, Okla., Gainesville, Texas, and more recently by a large refinery in the Chicago district.

Mr. Miskell has been a leader for many years in the Mid-Continent refining industry. As director, vice-president and president of the Western Petroleum Refiners Association he has been active in preserving and extending the railroad rate structure of the group and fighting its other battles. He is also a director of the American Petroleum Institute.

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Vol. 22 CLEVELAND, December 17, 1930 No. 51

# Reeser Scores «Commercial Selfishness» Of Railroads' Pipeline Proposal

CLEVELAND, Dec. 15

A DIVORCE of pipelines from the oil companies such as is sought by the railroads would not benefit the railroads, E. B. Reeser, president of the American Petroleum Institute, has written to R. H. Aishton, president of the Association of Railway Executives. The chief effect would be to place an added burden on the consumers of petroleum products.

Mr. Reeser told the railroad executives that it is impossible to stay the march of economic progress. Wars of teamsters against the pipelines 60 years ago and the early wars of express messengers and stage coaches against the railroads were cited as instances in the past where failure met efforts to thwart cheaper and better transportation.

"To infer that it might be possible to compel abandonment of pipelines, and to force the movement of oil and gas by tank car is as logical as to suggest legislation prohibiting automobiles and motor trucks from carrying passengers and freight which, but for this newer means of transportation, might move less conveniently and less cheaply by rail," Mr. Reeser said.

The latter cited figures to show that the railroads have not lost business in oil transportation. In the past five years oil tonnage has increased 41.8 per cent while all carload traffic has increased only 13.5 per cent. In the first half of this year petroleum tonnage increased 3.5 per cent while all carload traffic declined 9 per cent. The loss in business sustained by the railroads, therefore, was shown to be entirely in other lines.

Following is Mr. Reeser's reply on behalf of our industry to the proposal of the railway executives to ask congress to enact a law requiring oil companies to divest themselves of their investments in pipelines:

"The decision by the Association of Railway Executives to appeal to congress for legislation to compel oil companies to divest themselves of their investment in pipelines appears to have been reached without benefit of a knowledge of the facts.

"The petroleum industry is conversant, as are the railway executives, with the extent of the business depression. It is sympathetic with any proper plan for increasing railroad earnings; it believes in co-operation for the common good; and is anxious to help remedy unsatisfactory conditions. The railroads' proposal does not point in this direction. It goes entirely outside of the question of helping the carriers, to indicate how another industry may be injured.

"In brief, it appears that the railroads are trying to derail progress, and to force through by legislation an uneconomic interruption in the movement of petroleum and allied products. No material gain will accrue to anyone if such legislation be obtained. It is granted that the enforced separation of pipelines would injure the oil companies.

"The procedure followed when the government compelled the separation of coal properties from the carriers owning them would be repeated. The pipelines would not go to the railroads, which cannot operate them, but would be handed over to stockholders of the oil companies, the business to be continued then by independent pipeline companies such as it is conducted today. But there is no parallel between the situation that existed when railroads owned coal mines along their right of way, and the relationship between the oil and gas companies and their pipelines. The carriers were engaged primarily in the business of furnishing transportation, and an important source of revenue was the shipment of coal over their lines. Except for the relatively small amount used to fuel

the locomotives, the rail-owned coal was sold in competition with that produced by other mines which had no railroad tie-up.

"In the case of the oil and gas companies, their business is the production, purchase, storage, processing, and sale of oil and natural gas. Despite the technical status of many pipelines as common carriers, the oil companies are not in the transportation business, as such, but only so far as it has been necessary to lay underground lines. Gathering lines are laid into fields where oil and gas are produced and trunk lines to the point at which the owner of the raw material has facilities for its refining and sale.

"Essentially, all pipelines are and always have been plant facilities—mere adjuncts of the primary business of their owners. To infer that it might be possible to compel abandonment of pipelines, and to force the movement of oil and gas by tank car is as logical as to suggest legislation prohibiting automobiles and motor trucks from carrying passengers and freight which, but for this newer means of transportation, might move less conveniently and less cheaply by rail.

"The general public may think from the recommendation of railway executives that oil companies do not employ railway services; or that the railroads fear the loss of petroleum business they now enjoy.

"The movement of natural gas must be through pipelines. It cannot be handled by rail. There is only one reason which might have influenced the joinder of natural gas pipelines, namely, the unpatriotic notion that it would help the railroads if there might be legislation of this kind to increase the burdens of transporting natural gas, and hence to increase the most of natural gas to the consuming public, in order that the railroads may collect a freight on coal. In other words, natural gas, the best and cheapest household fuel nature has supplied, shall be made to cost so much that it will be kept out of any markets where coal is now used. It is unthinkable that the railroads can go that far in commercial selfishness.

"Let us see to what extent pipelines have taken petroleum business from the railroads.

"From the Interstate Commerce Commission reports of Class I roads, we find that in 1924 there was a total movement of 52,226,703 tons of crude and refined petroleum and products. This tonnage increased in the following year, and in every year thereafter. The gain for 1929 over 1924 was 41.8 per cent.

"How does that compare with the gain in total carload traffic, including petroleum? This business in 1924 was 1,147,605,218 tons, and like oil and its products, it too increased each year. However, the total gain in all carload traffic in 1929 over 1924 was but 13.5 per cent, or slightly less than one-third of the percentage gain made in petroleum alone, and if the business be segregated so as to leave out the contribution made by oil, the gain in other carload traffic would be less than that shown. In 1924 petroleum supplied 4.5 per cent of all rail freight; in 1929 it was 5.6 per cent.

"How are the railroads faring in 1930? The movement of petroleum and its products in the first six months increased 3.5 per cent over the corresponding period of 1929. In the same time, all carload traffic, including this increase in petroleum, showed a decrease of 9 per cent. It is apparent that the railroads' loss has occurred entirely in products other than those of the petroleum industry.

"How does the business supplied by the oil industry pay the railroads by comparison with that of other commodities based on tonnage originated and freight revenue received?

"The average rate per ton paid by agricultural products (which are perishable) in 1929 was $6.26, whereas that paid by petroleum and products was $5.32 per ton. Other leading industries paid much lower rates. For instance, timber and products averaged $3.71; iron and its associated products, $2.35; anthracite coal, $2.26; gravel and sand 85 cents. The wholesale price of gasoline in 1929 was 2 per cent less than in 1913, but freight rates on gasoline and other petroleum products increased 50 per cent in this period.

"History shows that new products, more efficient machines, better and cheaper methods of transportation, become established without regard to incidental injury they cause individuals or companies operating on the old lines, and that the march of economic progress cannot be stayed. As for the two industries concerned in this discussion, it is only necessary to recall the bitter war conducted by teamsters against the operation of the first pipelines; in the case of the railroads, we had the equally futile fight of the stage coach and express messenger.

"It is not likely that the railroads will benefit in any manner if the oil companies are ordered to divest themselves of the ownership of pipelines. Such separation certainly would not result in any increase in tonnage moved by rail. Nor would it mean any gain to the investor in railroads, pipelines, utilities or oil companies, but it would most surely put an increased burden eventually upon the consumer of petroleum products."

## Improper Plugging Brings Jail Sentences

LOS ANGELES—For failure to properly plug abandoned wells in oil fields of Kern county, two officials of the North American Consolidated Oil Co. were sentenced recently to three years each in the Kern County jail and two oil-well contractors are facing similar charges.

The period of confinement was later suspended to allow repairs to be made on the wells abandoned during 1930. According to R. D. Bush, State supervisor of the Division of Oil and Gas, this is the first time that Kern county operators have been prosecuted for methods of abandoning oil wells.

In the charges brought against the defendants it was claimed that where wells are left without being attended to, large quantities of water from overlying water sands run into the oil zones resulting in ruin to surrounding wells.

# Better Method Than «Potential» Needed In Evaluating the Future

By Burt H. Collins

THE waters are being muddied by the incorrect application of the newest outstanding phrase in the present over-production of crude. It is the use and abuse of "potential production."

During this past spring, Pennsylvania, the birth-place of oil and the last area to overproduce, obtained heretofore unrecoverable oil in unbelievable quantities, with the operators of the Bradford-Allegheny fields using an intensified water flood.

In April this year, their production was 43,000 barrels a day. This, added to the 37,000 barrels of Pennsylvania grade crude produced in the rest of the state, West Virginia and Ohio, made a total of 80,000 barrels. The peak of consumption in the spring was 72,000 barrels, but prices dropped rapidly as consumption fell to around 50,000 barrels.

The producers organized, appointed a committee on conservation, and everyone put his cards on the table, giving their production estimates for 1930 and 1931. A five-year plan was agreed upon and signed by owners of 85 per cent of the production, who own more than that of the acreages.

The first thing the committee did was to find out where they stood. With 110,000 acres of this highest of high grade oil, capable of producing during the next ten years, more than the total output of the Oklahoma City Pool, definite knowledge was necessary. It was then that the phrase "potential production" was tossed into the discard.

Something more definite, that came nearer revealing the true picture, was needed. "Estimated recovery and production" now tells the story. Estimated recovery per acre, with the rate of daily production fixed by the market outlet, as the variable, is the yard stick.

A survey has been made of the number of acres drilled for flood production, and an estimate made of when it will be necessary to drill new wells to take care of the decline in production.

MR. COLLINS, author of the accompanying article, is an independent producer with interests in the Mid-Continent and in the Bradford districts. He suggests here a plan for determining the degree of control needed in the industry, confining his specific illustration to Oklahoma. Instead of setting up a potential figure on a pool, with the inaccuracy that always enters into such estimates, Mr. Collins would apply a more rigid measurement.

The Oklahoma City pool with its 6500 proven acres, will have an investment of about $85,000,000 in drilling and equipment. The 110,000 acres of the Bradford-Allegheny fields will require about $300,000,000. So the rate of production just has to be controlled to market requirements, and a price maintained that will permit the production of this most valuable of all oils. But when the price of gasoline is only 5 cents more than nothing, the crude ties into the general situation to a degree that the amount received will not pay expenses, even if produced 100 per cent in place of the 50 per cent, as now.

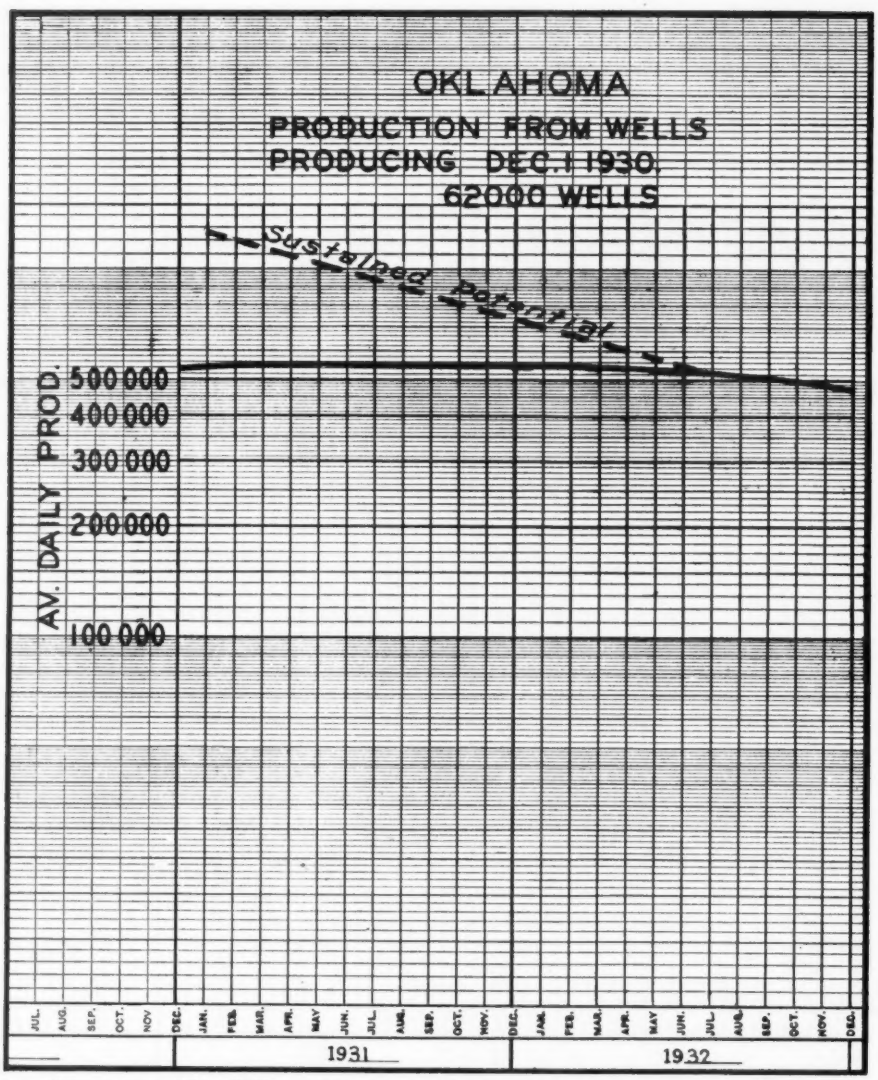
It is not for the purpose of telling someone else how to run his business, or because we do not believe their figures, that we decided to investigate conditions for ourselves in the Mid-Continent area, but because we must know when we may expect the general situation to improve. In other words, when will the price of gasoline reach a point that crude production will be on a profitable basis?

We group oil at the wells already drilled with oil in storage, since for all practical purposes, they are the same, depending upon the valve you turn as to which is drawn upon. Our over-all picture presents the complete story.

In the Mid-Continent area, we found that those who know the situation do not use potential production as their yard stick. The public, having no other figures, probably do, and they are rapidly reaching a point where they do not believe any figures.

What a given pool can produce for a day, or a month, or three months, is immaterial, as there is no market for it, nor storage. What we want to know, is how long will present wells supply the available market for crude? Naturally, new pools are more difficult to estimate correctly. There is a difference of opinion as to the probable total recovery of the Oklahoma City Pool. Our figure was obtained by taking the average estimates of a number of the largest companies. The assertion that the pool would "blow up" in 30 days if left wide open, has not influenced our figures, because *it will not be opened.*

Seemingly, what it will be called upon to produce is about 100,000 barrels a day. Now, for how many days can it produce this, and how much can the rest of the state produce in the same period? That is what we want to know.


OKLAHOMA
PRODUCTION FROM WELLS
PRODUCING DEC. 1 1930
62000 WELLS
Sustained potential
AV. DAILY PROD.
500 000
400 000
300 000
200 000
100 000
JUL. AUG. SEP. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.
1931
1932

**In this curve Mr. Collins has pictured the probable course of Oklahoma production, from present wells. He has plotted demand, or the amount of oil to be produced, against sustained potential. The latter was arrived at by a study of the reserves in the state, and not the potential figures which are frequently the result of a gauge lasting a few minutes or hours, as in the Oklahoma City field. Given a demand as indicated by the bottom line, if no new wells were added, the true production without control would meet the demand about June, 1932. New wells would lengthen the time of meeting, greater demand would shorten it**

Then, guessing at the amount of crude requirements for the state, we can begin putting the picture together. We are using as the average figure of consumption for the state 520,000 barrels. Oklahoma City had an estimated total recoverable content of 200,000,000 barrels, of which 53,000,000 barrels have been produced, leaving 147,000,000 barrels yet to come.

It is probable that 47 per cent of the oil will be produced after the pool is below the 100,000 barrels a day point, or 95,000,000 barrels, resulting in 105,000,000 barrels produced, or to be produced at the 100,000 barrels rate. On this basis, 54,000,000 barrels are still to be produced at the 100,000 barrels a day rate, (estimated consumption), and 95,000,000 barrels afterwards. At this rate of consumption, it would take about 18 months to work off the excess above the 100,000 barrels a day.

Now we have to look at the rest of the state. What can it do during the next 18 months? We have jumped quite a way in advance, and our consumption figure will have to be changed somewhere along the line, but we can use the present estimates as a base, and then add or deduct in percentages.

Giving the Oklahoma City pool 100,000 barrels outlet a day, leaves 420,000 barrels as required from the rest of the state to meet consumption for 18 months. As 480,000 barrels will probably be nearer the amount of consumption for each of the next 4 months, we estimate that the rest of the state can produce its quota for the same period of 18 months.

In this estimate is the expected production from wells now drilling in Oklahoma City and other new areas. These estimates are conservative, and it is possible that enough oil is in sight for about 2 years.

These figures represent the amount of oil that will probably be taken from each class to furnish its quota of required oil, with proration in force, to balance consumption, assuming it is constant. As a matter of equity there may be adjustments as between classes that will alter the apportioned oil of such classes during certain periods, but the totals remain the same.

However, it must be borne in mind and remembered, that any new pools will extend this meeting of consumption and production by the time it is required to work off all such new excess production. With a knowledge of this condition, anyone drilling and encountering oil must

**Estimated Daily Average Apportioned Production**

| | 12 mo. Jan. 1 1932 Bbls. | 15 mo. April 1 1932 Bbls. | 18 mo. July 1 1932 Bbls. |
|---|---|---|---|
| Class A (Settled) | 225,000 | 210,000 | 198,000 |
| Greater Seminole (Settled) | 110,000 | 110,000 | 110,000 |
| Greater Seminole (Semi-flush) | 60,000 | 60,000 | 60,000 |
| New Pools and all drilling wells, including Oklahoma City | 30,000 | 40,000 | 40,000 |
| Oklahoma City (Completed wells only) | 100,000 | 100,000 | 100,000 |
| TOTAL to meet estimated consumption | 525,000 | 520,000 | 513,000 |

feel that they are in the position of one paying a discovery bonus represented by the cost of the well, which can only be repaid after the prior surplus has been disposed of.

Now, let us glance at Texas, with New Mexico added to it. Our information is not complete enough to form anything more than a guess, but our guess is that they have enough excess oil in the proven areas to last them for one year and four months, or longer.

California, with the Kettleman Hills Pool, indefinite as it is, may be said to have oil enough from present defined sources to meet requirements for 18 months or two years.

With this outlook on the over-all picture, certain definite things stand out. They are:

1. Proration of production in all the Mid-Continent area and California is necessary for all of 1931 and probably most of 1932.

2. No new wells are required. Only unit wells should be drilled where demanded by lease requirements.

3. A tariff on oil and products will help stabilize the price. The fear is importation of Russian oil.

4. Immediate steps should be taken to raise the price levels to a profitable point, with refiners doing their part.

5. Future over-production of crude has been changed to available oil, to be produced as required through controls.

6. There is a need of an information bureau, under the direction of the proration committees of the several states; a part of whose function should be to keep producers, refiners, and all those interested, constantly advised.

## Gasoline, Kerosine Cut 2c Through Ohio

CLEVELAND.—On Dec. 17 Standard Oil Co. of Ohio will reduce tankwagon and service station prices of gasoline 2 cents through Ohio, making new prices 16 cents and 17 cents respectively, including 4 cent state tax.

On the same date it will reduce tankwagon price of kerosine 2 cents, through the state, to 13 cents.

Other reductions, announced to become effective Dec. 17 included 1 cent on aviation gasoline, to 19 cents tank wagon; Varnolene and V. M. P. naphtha, to 17 cents; and D. C. naphtha, to 18 cents tankwagon.

For the first time in two years, gasoline prices at all points throughout Ohio are the same. Points at which prices had been below the statewide level were brought to the new statewide prices, indicating advances of from 1 to 4 cents at some points, and cuts of only 1 cent at other points. These below-normal prices had been in effect in 10 cities, six townships and three counties.

The three counties are Butler and Lucas, where the new prices indicate an advance of 1 cent on tank wagon, and 2 cents on service station; and Preble county, where the tankwagon was cut 2 cents, and service station 1 cent.

The last previous general change on gasoline and kerosine in Ohio was a 2 cent cut on Sept. 18.

### Late Market Changes

NEW YORK—Due to an increase of 1 cent in the gasoline tax in New Jersey, Dec. 1, Standard Oil Co. of New Jersey advanced gasoline prices 1 cent that date thru the state to cover. Prices in the tank wagon table of this issue are corrected to show that increase.

### Oppose Gasoline Tariff

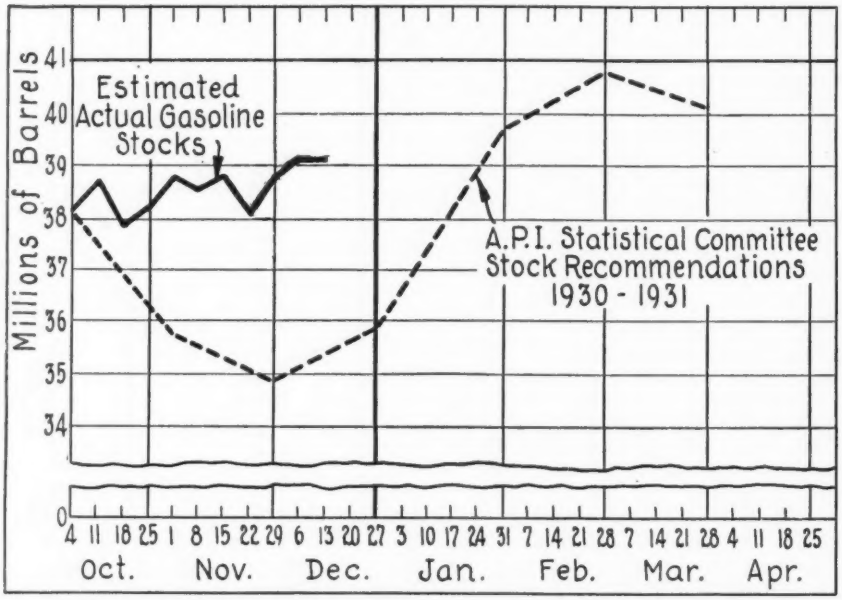
TORONTO, Dec. 12.—Canadian newspapers have been carrying advertisements urging people to petition the government at Ottawa in protest against the new 2½-cent tariff on gasoline. It is stated in these advertisements that this tax puts "the entire control of the petroleum industry in the hands of four persons who now control the wholesale and retail prices of gasoline and can make the price to the consumer what they will."

### Seep Not Buying Somerset Crude

OIL CITY.—On Dec. 15 Joseph Seep Purchasing Agency discontinued purchasing Somerset and Wayne crudes in Cumberland lines. On Dec. 16 it discontinued purchasing Somerset crude in Eureka lines. Officials said a market for the oils could not be found.

**Santa Claus was greeted in Fairmount, W. Va., last year by this decorated station of the Patton-Henry Oil Co. The huge fireplace, with Santa climbing out of the chimney, was built around the station building. Entrance to the building is at the rear of the chimney. A snow bound countryside scene is across the rear of the station lot, on the brow of a hill. Both decorative pieces were constructed of building board**

# Oil Industry's Progress Toward Stability


Millions of Barrels
41
40
39
38
37
36
35
34
0
Estimated Actual Gasoline Stocks
A.P.I. Statistical Committee Stock Recommendations 1930 - 1931
4 11 18 25 1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21 28 7 14 21 28 4 11 18 25
Oct. Nov. Dec. Jan. Feb. Mar. Apr.

**The above chart shows the present status of actual gasoline stocks at refineries in this country (solid line) as compared with the recommendations in the report of the A. P. I. committee for stocks for various periods (dotted line) to bring the industry out April 1 with total stocks of 40,000,000 barrels.**

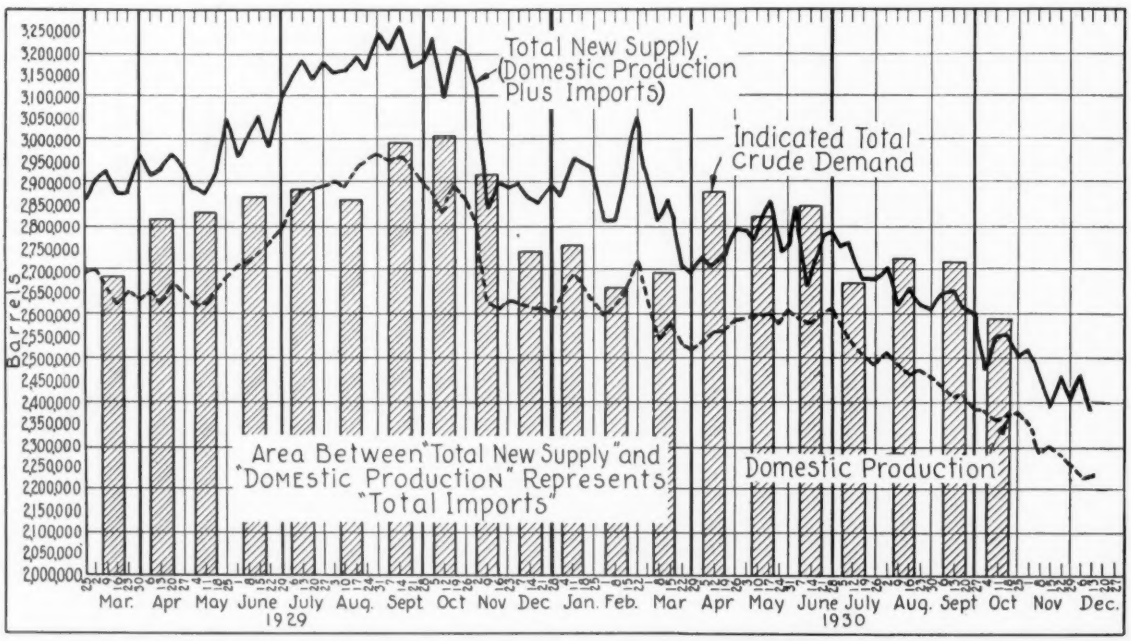
NEW supply of crude oil decreased 78,545 barrels daily average in the week ended Dec. 13 according to the American Petroleum Institute. Average new supply of crude during the week was 2,390,135 barrels per day.

The reduction was due entirely to a drop in imports of foreign crude. Average imports were 157,285 barrels per day as compared with 239,430 barrels per day in the first week of December, a drop of 82,000 barrels.

Domestic production of crude increased approximately 4000 barrels to 2,232,850 barrels per day due to substantial gains in California and Oklahoma output. California output of crude rose 11,300 barrels daily average as a result of an increase of 8000 barrels in Elwood and 5000 barrels daily average in Long Beach. The increase in Oklahoma totaled 18,000 barrels daily average. Texas production dropped when output of West Texas fields was reduced 20,150 barrels daily average.

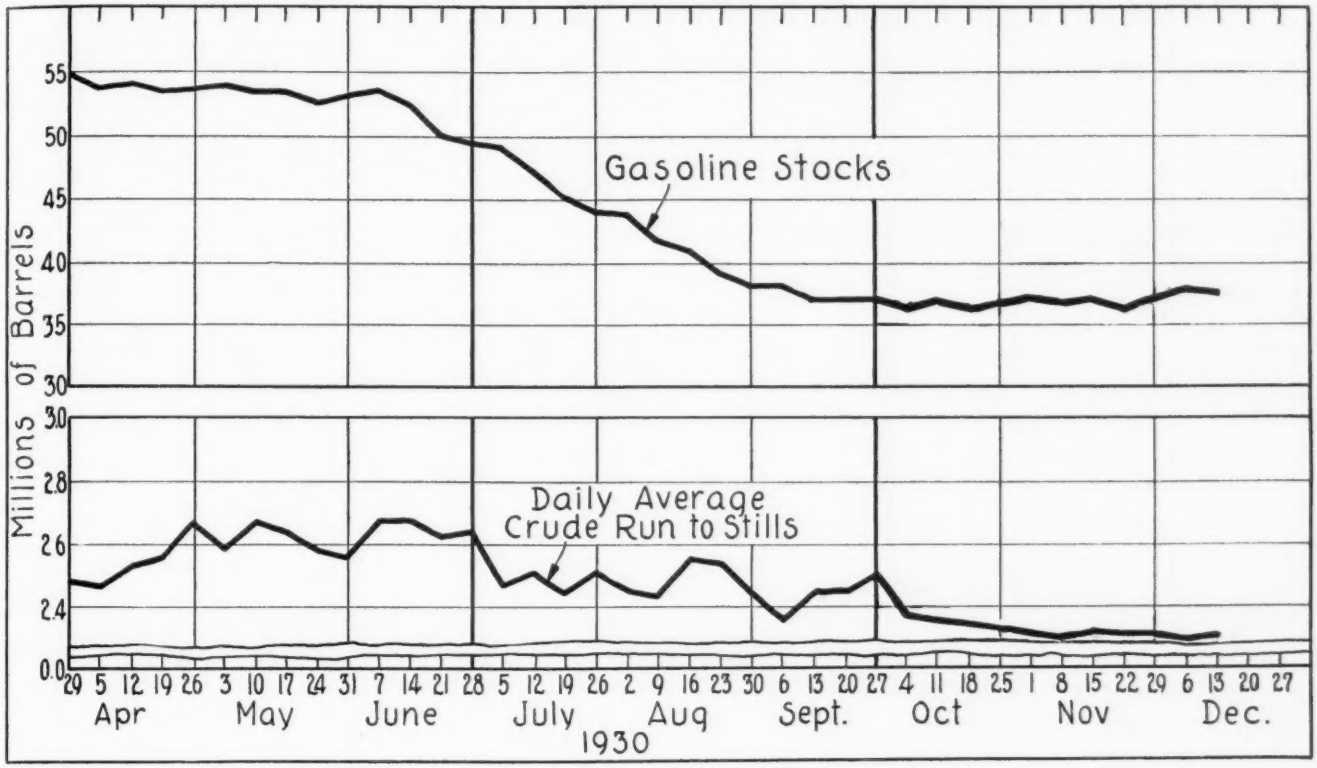
Refinery demand for crude oil increased sharply during the week bringing about a better balance between supply and demand for raw material. Better demand for both gasoline and heavy fuels enabled refiners to increase their runs to stills 97,800 barrels daily average to 2,285,100 barrels per day.

Estimated total stocks of gasoline at U. S. refineries on Dec. 13 stood at 39,200,000 barrels, approximately the same as on Dec. 6. Refiners operating 95.7 per cent of the nation's still capacity made a small cut in stocks.




**This chart shows crude oil supply from week according to the American Petroleum Institute reports (solid line) in relation to indicated crude oil demand as taken from the Bureau of Mines monthly reports (shaded columns).**

## U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.




# Large Increase in Gasoline Shipments Indicated

By Telegraph

NEW YORK, Dec. 16

INDICATED demand for both gasoline and fuel oil increased substantially in the week ended Dec. 13. In spite of an increase of 97,800 barrels daily average in crude runs to stills, refiners were able to reduce fuel and gas oil stocks 983,000 barrels and at the same time make a draft of 62,000 barrels on gasoline stocks, according to reports of the American Petroleum Institute.

Increases in crude runs to stills were general in all groups west of the Appalachians. The East Coast group cut runs 4300 barrels daily average and the Appalachian group reduced runs 11,600 barrels daily average.

Indiana-Illinois refiners increased their crude runs 22,000 barrels daily average, Oklahoma-Kansas 16,900 barrels, Texas 44,500 barrels, of which 29,300 barrels was on the Gulf Coast, and California 25,700 barrels. Assuming gasoline yields to be about the same a heavy increase in gasoline demand is indicated since stocks were increased 455,000 barrels the previous week and cut 62,000 barrels in the past week.

Coastal refining groups were the only ones to draw on gasoline stocks. Texas Gulf Refiners cut stocks 239,000 barrels as compared with an increase there of 633,000 barrels in the first week of December. East Coast refiners cut gasoline stocks 164,000 barrels and California 37,000 barrels.

## Current Refinery Operations

| Districts | Per Cent Capacity Reporting | Daily Average Crude to Stills (Barrels) Week Ended | | Per Cent of Reporting Capacity Operated Week Ended | | Stocks (Thousands of Barrels) Gasoline | | Gas & Fuel Oil | |
|---|---|---|---|---|---|---|---|---|---|
| | | Dec. 13 | Dec. 6 | Dec. 13 | Dec. 6 | Dec. 13 | Dec. 6 | Dec. 13 | Dec 6 |
| East Coast | 100.0 | 441,700 | 446,000 | 72.1 | 72.8 | 5,263 | 5,427 | 10,618 | 10,852 |
| Appalachian | 93.8 | 71,000 | 82,600 | 53.6 | 62.3 | 851 | 829 | 951 | 1,035 |
| Ind., Ill., Ky | 97.5 | 274,300 | 252,300 | 72.0 | 66.2 | 4,232 | 4,193 | 3,747 | 3,868 |
| Okla., Kans., Mo | 89.4 | 254,300 | 237,400 | 61.7 | 57.6 | 2,523 | 2,413 | 4,494 | 4,538 |
| Texas | 91.9 | 508,300 | 463,800 | 68.4 | 62.4 | 6,763 | 6,896 | 10,832 | 10,775 |
| La., Ark | 98.3 | 149,400 | 145,900 | 57.0 | 55.7 | 1,269 | 1,201 | 2,197 | 2,224 |
| Rocky Mountain | 93.1 | 40,800 | 39,700 | 29.2 | 28.4 | 1,581 | 1,548 | 1,001 | 1,026 |
| California | 98.8 | 545,300 | 519,600 | 61.4 | 58.5 | 15,198 | 15,235 | 104,041 | 104,546 |
| Total | 95.7 | 2,285,100 | 2,187,300 | 64.0 | 61.2 | 37,680 | 37,742 | 137,881 | 138,864 |
| Texas (Gulf Coast) | 100.0 | 382,600 | 353,300 | 72.3 | 66.7 | 5,424 | 5,663 | 8,190 | 8,101 |
| La. (Gulf Coast) | 100.0 | 109,900 | 108,700 | 74.5 | 73.7 | 1,014 | 935 | 1,274 | 1,253 |

# Rocky Mountain Oil Men Favor Tariff on Oil and Gas

By Telegraph

GREAT FALLS, Mont., Dec. 15

RESOLUTIONS denouncing the U. S. Department of the Interior for its policy of nullifying the mineral land leasing law for the development of oil and gas on the public domain were adopted by the Montana chapter of the Rocky Mountain Oil & Gas Association. Intervention in mandamus suits before the U. S. Supreme court were urged by the producers.

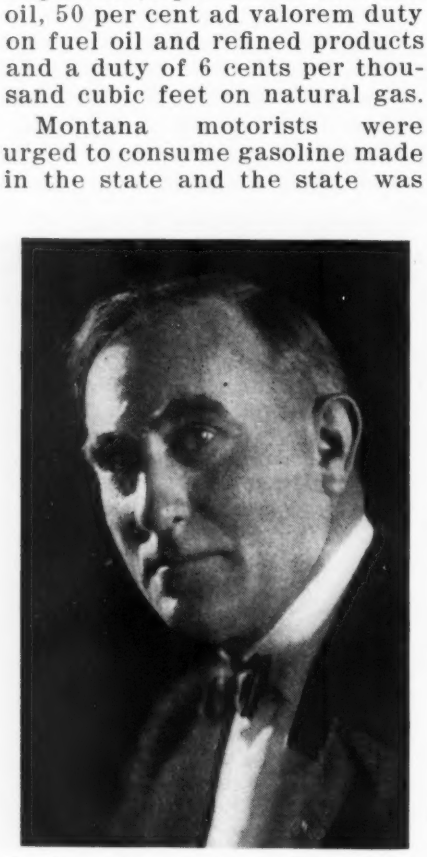
The meeting was the sixth annual convention of the Montana chapter held in conjunction with the second annual meeting of the Alberta Oil & Gas Association. Attendance included more than 200 oil men from ten states and two Canadian provinces. A special train brought Canadian oil men from Calgary.

The tariff question brought approval of resolutions for an impost of $1 per barrel on crude oil, 50 per cent ad valorem duty on fuel oil and refined products and a duty of 6 cents per thousand cubic feet on natural gas.

Montana motorists were urged to consume gasoline made in the state and the state was urged to abolish the present restrictions on the sulfur content of motor fuel sold in the state. A concerted effort to obtain lower freight rates was suggested.

L. F. Sonntag of Great Falls, vice president of the Triangle Oil Co., was elected president of the Montana association. Walter Brittan was re-elected secretary and R. P. Jackson, president of the Suntana Oil Co., was re-elected treasurer.

A feature of the two-day convention was the international banquet. Invitations for the next one were sent by Calgary and Lethbridge, Alberta, and Great Falls and Billings, Mont.



L. F. Sonntag, new president of the Montana chapter, Rocky Mountain Oil and Gas Association.

## Ohio Producers Favor Tariff on Crude

LOGAN, O., Dec. 12.—Tariff on crude oil was recommended in a resolution adopted here Dec. 11 at the annual meeting of the Southeastern Oil & Gas Producers' Association. A resolution, presented by W. E. Burns, Marietta, asked "Congress and the President of the United States to take such action as will protect the petroleum industry of the United States."

The association also adopted a resolution asking county auditors in southeastern Ohio to place a new valuation on oil lands for taxation. It was pointed out that present valuations are based on crude oil at $4 a barrel but the present price of the oil is $1.45 a barrel.

The producers discussed the low price of Pennsylvania grade crude in southeastern Ohio, and a refinery proposed for the district.

A. E. Faine, New Straitsville, urged the Ohio producers to join in the conservation movement as a means of getting relief from the present depressed crude oil market. This would be only an emergency measure, he indicated, and real relief could come only by establishing the merit and value of the oil particularly in the area in which it is produced.

The association agreed to cooperate with the Pennsylvania Grade Crude Oil Association in a plan to put out tire covers advertising Pennsylvania grade crude in the districts where it is produced.

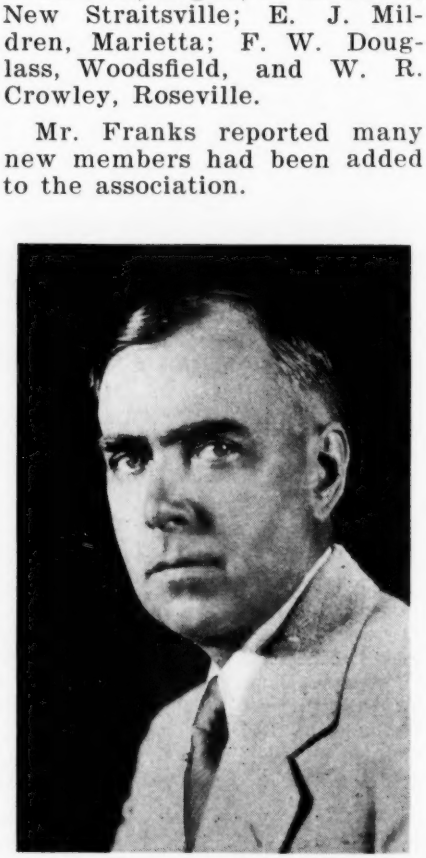
H. D. Atha, Logan, reported on the meetings in Pittsburgh of the Pennsylvania grade producers and their efforts to effect curtailment. Mr. Atha is chairman of the Southeastern Ohio Conservation Board.

Albert B. Craig, Freedom Oil Works, Freedom, Pa., spoke at a dinner session on phases of the refining division, such as crude oil supply, cold test lubricants, and marketing.

Officers elected are: I. C. Grimm, Woodsfield, president; H. B. Goddard, Marietta, vice president; Charles Hammond, Columbus, vice president, and W. L. Franks, Logan, secretary-treasurer.

Directors elected include the officers and: A. D. Hufford, Bremen; H. D. Atha, B. A. Holl and C. H. Bell, Logan; A. E. Faine, New Straitsville; E. J. Mildren, Marietta; F. W. Douglass, Woodsfield, and W. R. Crowley, Roseville.

Mr. Franks reported many new members had been added to the association.



Donald Campbell, retiring president of the Montana chapter, Rocky Mountain Oil and Gas Association.

# One-Stop Service

## Oil Companies Use From 2 to 5 Per Cent of Stations for Merchandising Tests

### Article 1

By E. L. Barringer
N. P. N. STAFF WRITER

"WHAT can we sell at our service stations to increase our profits?" Here is a fundamental question summing up today's merchandising thought of the petroleum industry.

And the petroleum marketer is not alone with his question. It is being asked in all lines of retailing. Merchandise today is seeking new channels to reach the consumer. Retailers are seeking lines of goods that they can logically move through their stores to increase profits. Someone has said "there is nothing so constant as change," and this is particularly applicable to merchandising today.

Within the petroleum industry there has been a growing consciousness of a new merchandising day. The refiner is recognizing that his retail outlets may be more useful than just a means of moving his gasoline and motor oil production. The oil jobber-retailer is seeing more sales possibilities for his gasoline stores. And the consumer, too, is looking more and more to the corner filling station to supply more of his automotive wants.

For several years our industry has been tending towards a larger line of merchandise to sell through the service station. The trend has been labelled one-stop, or super-service. First to feel the trend was the dealer station. Here the economic pressure of increasing gasoline outlets was felt more sharply and quickly. Consequently additional lines of goods were stocked to increase profits.

With the larger sales units of the industry the trend naturally has progressed at a slower pace. A big company by virtue of its number of outlets and personnel moves more slowly. But the trend is distinct. Plans being formulated now by large companies indicate an acceleration of the movement in the immediate future. Practically every major oil company today is engaged in some form of one-stop service, either in its own right or through subsidiary sales companies, or has plans near completion for diversifying its sales line.

THE accompanying article is the first of a series of four which will discuss the present trend in One-Stop merchandising. Succeeding articles will tell of sales methods, including displays of tires and accessories, commissions to stimulate alertness in employees and methods of using "Key Stations."

Evidence of this trend among big companies is tucked away in many sections of the country. In one community a major company will have a few tires displayed at stations. In another section are stations offering brake service. Accessories are being sold at another place. These are evidence that the sales possibilities of the service station are being tested, that executives are testing merchandising methods. Some of these efforts have passed the test age, and the merchandise is being introduced over a large sales theater.

The movement has followed a natural trend toward complete servicing of the auto. First the station serviced the car only to the extent of selling grease and oil, and in motive power through gasoline. Then came some extra services —air for tires, water for the radiator, personal servicing as wiping the windshield and giving the tourist road information and later, the application of grease and oil to the car.

Development of lubrication service brought the greasing palace, an enclosed lift with high pressure equipment. When the industry began to move out for new lines to sell there was the logical trend towards a more complete service for the auto.

A check of the consumer's automotive needs will produce a sizable list of goods that logically can be sold at a station. Most of these wants are apparent to the alert station employe. They are wants that are filled through suggestion salesmanship.

As a practical example take the cooling system of an auto. Already the consumer looks to the station for water, and in winter for anti-freeze solutions. It is at the station also that the consumer is more "radiator minded" when he finds his water supply needing replenishing frequently. And being in this frame of mind he is receptive to placing the cooling system back to satisfactory service (aside from major repair jobs). Which all sums up to a splendid opportunity to sell this customer some radiator cleaner, new hose connections, a new fan belt, and some radiator cement for the small leaks. The same salesmanship can be extended for the entire car.

"The service station can sell anything for the car that wears out and needs replacement excepting such items requiring technical knowledge of sizable investments for machinery," is the attitude of one equipment manufacturer on oil company one-stop service.

**A One-Stop station developed from a small gasoline station by the Cumbow-Lanning Oil Co., Sioux Falls, S. D.**

The personal wants of the automobile driver himself are being considered also along with those of the car itself. So far goods stocked to fill the wants of the owner are soft drinks, tobacco, candy, and the acceptance of telegrams. How far this angle, or any other in station merchandising, will go is entirely up to the ability of the oil company.

In development, from planning across an office desk to actual operation, oil company one-stop merchandising has followed the accepted principle of testing the sales plan in a limited number of stations before stocking the line over a wide area.

The number of service stations necessary for a thorough merchandise test is a problem peculiar to each company, but among the major oil companies the number varies from 2 to 15 per cent of the organization's total outlets.

One company, a subsidiary sales organization, has blocked out 2 per cent of its stations for testing purposes, and all lines are experimented on at these outlets. To conduct all tests with the same managers and station men this company's stations are all under the jurisdiction of one sales supervising district.

Within this district the stations were selected to obtain a view of the buying habits of all classes of residential sections. There are stations in the poor districts representative of smaller buying power. And all sections up the line to the best districts with their large buying power per auto owned. Thus the company obtains a representative sales picture of a given article, and can forecast what to expect from other stations in similar communities.

Another major company utilized several hundred stations in one state for testing a group of accessories and specialty products. As a result of this one division's efforts a similar line was introduced in many other states.

Four large cities are testing ground for another of the major companies. One city is in the south, one in the Mississippi river valley, and two in the Great Lakes region. In each city is a complete one-stop service station, in a modern building, and fully equipped for the entire line of service. In this case the buying habits in various sections of the country are analyzed for a company that virtually has nation-wide outlets.

Fifteen per cent of another major company's stations, all in one geographic section, are to test a certain product prior to stocking in all stations, if the test is successful.

The introduction of a service, not related to one-stop service, in recent years by one major company was through all stations in four cities. Two cities were in the eastern section of the middle-west, and two were in the Atlantic seaboard district. In each section there was one large city, and one smaller city just above the small town class. As all stations offered this service the tests shed light on merchandising results for the entire city as well as for the individual station.

The length of time necessary for a complete test is optional, a matter of weeks or a few months, depending entirely upon the nature of the product and the required salesmanship. One of the longest experimental periods was that of a company with about 500 stations testing out a product to be sold under its own brand name. Seven stations of a subsidiary, all in one medium sized city, tested sales for two years prior to the parent organization stocking it in most of its own stations. Basically this long period was used to carry the product through a complete cycle of life as at the end of two years goods sold early in the test would have been worn out and replaced.

An important item in selecting test stations is the ability of the station employes and the sales supervisors. Obviously the supervisors should be thoroughly sold on a product before attempting to conduct merchandising tests. Alert station men are requisites also if the product and methods are to be given a fair test.

There is a psychological effect of the record made by alert employes when the line is introduced in all stations. Naturally an organization would like to have all station men of the caliber of its best man. The indifferent employe on the border line, or the 50 per cent efficient salesman is no model to hold up to the whole force. The most energetic salesman is the ultimate goal desired. So with the introduction of new lines the records made by the best salesman can be held up as models, to erase any doubt that the product can be sold.

# Motorists Vote Quick Starting Leads As Gasoline Buying Inducement

By Roger B. Stafford

N. P. N. STAFF WRITER

CLEVELAND, Dec. 15—WHAT qualities or properties in a gasoline induce a motorist to buy the gasoline he usually buys?

With no detailed information at hand, the average gasoline marketer or refiner probably will say "anti-knock" is the dominant factor of influence.

But "quick-starting" led in a canvass of more than 50,000 motorists made last year for Shell Eastern Petroleum Products, Inc. "Anti-knock" was fifth in the list of influencing factors, although addition of replies, in which "pep," "power" and "pickup" were specified, to the votes cast for "anti-knock" would place "anti-knock" in the leading position.

But the motorists who represented a cross section of the American motoring public, gave "quick starting" a plurality, with "mileage," "power," "low carbon content," "anti-knock," "pep" and "purity" ranking in order ahead of numerous other factors.

The survey was made in 31 cities from coast to coast. Questionnaires given or mailed motorists were on the stationery of the Outdoor Advertising Agency of America, whose research department conducted the survey; the Leach Business Research Bureau, affiliated with the agency; a Chicago publishing house, or the commerce department of a middle western university. The name Shell did not appear in any of the questionnaires or the letters that accompanied some of them, so that the survey would not be prejudiced.

The survey was made to guide the Shell Eastern in its advertising campaign and development of marketing policies, the company explained in revealing the results which were assembled in Chicago, outside the territory where the company operates.

## What Influences Buyers?

THIS is the first of three articles covering a survey made by an independent research agency for Shell Eastern Petroleum Products, Inc., to ascertain what qualities in a motor fuel influence motorists in their buying.

The second article will tell what motorists expect in a motor oil. The third article will deal with split and 100 per cent dealer accounts. The survey for Shell will be supplemented in the third article with a survey by NATIONAL PETROLEUM NEWS of a group of former split account stations that have become 100 per centers.

Nine questionnaires pertaining to gasoline were sent out. Each questionnaire went to 5000 to 8000 motorists whose names were obtained from a mail list house. Returns varied from 5 to 17 per cent of the mailing. Returns on each questionnaire were tabulated separately. A general summary was also prepared. This summary gave these average total percentages for various properties that influenced buying:

| | | Percentage |
|---|---|---|
| 1 | Quick starting | 14.90 |
| 2 | Mileage | 12.56 |
| 3 | Power | 10.80 |
| 4 | Low carbon | 9.83 |
| 5 | Anti-knock | 7.85 |
| 6 | Pep | 5.18 |
| 7 | Purity | 5.11 |
| 8 | Uniformity | 4.92 |
| 9 | Pick-up | 4.56 |
| 10 | Convenience | 4.54 |
| 11 | Service at station | 4.40 |
| 12 | Reputation | 3.80 |
| 13 | Price | 3.18 |
| 14 | Smoothness | 1.70 |
| 15 | Speed | 1.30 |

This tabulation shows that quick starting is the leading thought in the motorists' minds, the ability to step into a car and get going. Anti-knock is fifth on the list, but lumping of percentages of properties that are inherent in anti-knock gasolines—pep, power and pick-up—gives anti-knock a much higher rating than is shown in the list.

The sum of the anti-knock, pep, power and pick-up percentages is 28.39. It may be argued that pep, power and pick-up do not necessarily mean that the gasoline that possesses those qualities is an anti-knock gasoline, but no gasoline with a fairly high knock rating will respond quickly to the throttle and give those properties to the engine. All three of these qualities are lost in an engine that knocks badly.

The survey reveals that motorists want a low initial boiling point in their fuel, that the fuel must not knock so as to lose pep, power and pick-up, that it must burn cleanly, and that long mileage rather than low price is the motorists' idea of economy.

In most of the questionnaires the motorists were asked their occupations. The returns show more than 175 occupations.

More than 100 brands of gasoline were mentioned as preferred. A breakdown was made of 10 of the leading brands of gasoline mentioned in the returns shows what motorists look for in each brand. The qualities expressed for

each in nine cases follow closely the order of preferences expressed for the more than 100 brands.

The accompanying table shows the way motorists rate the qualities that induce them to buy the 10 leading brands. Brands A, B, and C are distributed virtually nationally. Brand D is distributed in most of the area east of the Rocky mountains. Brand E is marketed through the east, south and middle west; brand F through the east and south; G through the east, southwest and parts of middle west; H through the Rocky mountain, middle west, southwest and eastern territories, J through the east, middle west, south and southwest, and K on the Pacific and Atlantic coasts.

Because the wording of the different questionnaires varied, all 15 classifications of qualities given in the national averages are not available for the individual gasolines.

In two questionnaires motorists were asked if they used a different gasoline in winter than in summer. Only 18.7 per cent of the replies on this question were to the effect that a different fuel was used, and 80.1 per cent gave quick-starting as the reason for the change in winter.

On two other questionnaires the motorists were asked if they used a different gasoline in summer than in winter. Only 23.4 per cent of these replies were that a different fuel was used. Easier starting again was the leading reason given. It led with 51.7 per cent of the replies to its credit.

In one of the early questionnaires these questions were asked:

"What brand of gasoline do you now buy?

"Why?

"What brand of motor oil do you now buy?

"Why?

"Do you use a different gas in winter than in summer?

"If so, why?

"Do you use a different oil in winter than in summer?

"If so, why?

"What special qualities or points do you think a good gasoline should have?

"What special qualities or points do you think a good motor oil should have?

"Approximately how many miles do you drive your car a year?"

There were spaces for motorist's name, address, and occupation.

One questionnaire was a postal card on which two questions were asked. One was:

"What special qualities or points do you think a good gasoline should have? Mention particularly those qualities or points which influence you most in your purchases of gasoline."

The second question covered motor oil instead of gasoline.

In another questionnaire, also on a postal card, these points for gasoline were listed in the order given for checking:

"Convenience, less carbon, mileage, power, anti-knock, price, purity, quick starting, reputation of manufacturer, service at stations, speed, and uniformity."

In another letter sent on the stationery of the Leach bureau two of the questions differentiated between the qualities expected in a summer gasoline and those expected in a winter gasoline.

Attached to three questionnaires sent out on the stationery of the commerce club of a middle western university was this letter signed by a student:

"I am a student in the advertising class at ——— University School of Commerce. I am making a brief survey among automobile owners and would appreciate your help and courtesy in answering the questions listed below. It will not be necessary to sign your name unless you so desire. Enclosed is a stamped envelope for your convenience.

"Thanking you for your cooperation, I am, etc."

## Where Survey Was Made

THE gasoline and motor oil survey for Shell Eastern Petroleum Products, Inc., was made in the following cities:

Augusta and Portland, Me.
Concord, N. H.
Boston, Mass.
Providence, R. I.
Hartford, Conn.
New York City.
Philadelphia, Pa.
Baltimore, Md.
Atlanta, Ga.
Jacksonville and Miami, Fla.
Birmingham, Ala.
Memphis, Tenn.
Cleveland and Columbus, Ohio.
Detroit, Mich.
Louisville, Ky.
Chicago and Springfield, Ill.
Milwaukee, Wis.
St. Paul, Minn.
St. Louis and Kansas City, Mo.
New Orleans, La.
Dallas, Texas.
Denver, Colo.
Salt Lake City, Utah.
Los Angeles and San Francisco, Calif.
Portland, Ore.

## How Buyers of 10 Leading Gasoline Brands Rate Qualities That Influence Them

| | Brands | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Qualities | A | B | C | D | E | F | G | H | J | K |
| Quick starting | 1 | 1 | 1 | 1 | 1 | 1 | 7 | 1 | 1 | 1 |
| Mileage | 2 | 2 | 4 | 2 | 3 | 2 | 3 | 3 | 2 | 3 |
| Power | 4 | 3 | 2 | 3 | 5 | 5 | 1 | 2 | 3 | 2 |
| Low Carbon | 3 | 4 | 3 | 4 | 2 | 3 | 4 | 4 | 4 | 4 |
| Anti-knock | 6 | 10 | 5 | 5 | 4 | 4 | 6 | 10 | 8 | 6 |
| Pep | 9 | .... | 13 | 10 | 10 | 11 | 9 | .... | .... | .... |
| Purity | 8 | 6 | 10 | 11 | 12 | 10 | 2 | .... | 9 | .... |
| Uniformity | 7 | 5 | 8 | 8 | 7 | 6 | .... | 8 | .... | 9 |
| Pick-up | 5 | 13 | 9 | 6 | 6 | .... | 5 | 11 | .... | 5 |
| Convenience | 13 | 8 | 11 | 9 | 11 | 8 | 10 | 7 | 7 | .... |
| Service at station | 11 | 7 | 7 | 7 | 8 | 7 | 8 | 6 | 5 | 8 |
| Reputation | .... | 9 | 6 | .... | 9 | 9 | 12 | 5 | 6 | 7 |
| Price | .... | 12 | 14 | .... | 13 | 13 | .... | 9 | .... | .... |
| Smoothness | 12 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Speed | 10 | 11 | 12 | 12 | .... | 12 | 11 | .... | 10 | 10 |

# Little Difference in Volatility Between Competitive and Premium Gasolines

CLEVELAND, Dec. 13 VERY slight differences are noted between "competitive price" and "premium price" motor fuels, in the semi-annual motor gasoline survey of the U. S. Bureau of Mines conducted during August. This statement is made with particular reference to gravity, vapor pressure, and distillation data, considering each class as a whole, according to E. C. Lane, E. L. Garton, and A. J. Kraemer, authors of the report.

Average gravities of the two groups are the same. Vapor pressures in both groups are approximately the same, with an average of 7.2 pounds per square inch for competitive gasolines, and 7.0 pounds for premium price fuels. The ten per cent evaporated temperatures are about the same for both classes. The lowest ten per cent evaporated temperature was 118 F., for a premium price fuel from Omaha, the highest was 163 F., for a competitive price gasoline from Tulsa. The vapor pressure of the Omaha sample was 9.0 pounds per square inch, that for the competitive gasoline with the highest ten per cent evaporated temperature was 5.9 pounds.

This semi-annual report is a much more ambitious one than any previously issued by the bureau. The report is to be issued in two parts, the first only having been issued so far. This first report deals with data on gravity, vapor pressure, and distillation, the second will be issued soon, and will give the results obtained on the same samples regarding copper-strip corrosion, color, sulfur content, copper-dish evaporation residue, and gum test by the Bureau of Mines steam oven method.

Approximately twice the number of samples have been taken in this survey, as compared to the number taken in previous surveys, and a larger list of cities were visited. Twenty cities were surveyed and 298 samples were taken.

The vapor pressure determinations were made by the A. S. T. M. Tentative Standard Method D323-30T,* the samples being cooled down to the temperature specified before being opened for removal of the test sample. The ten per cent evaporated temperature was determined by plotting the temperatures at five, eight, and ten per cent recovered against

*See details of method in NATIONAL PETROLEUM NEWS, July 9, 1930, page 65.

## Table I—Average Results of Motor Gasoline Survey, August, 1930

**Competitive Price Gasoline**

| City | Spec. grav. | Degrees A. P. I. | Vapor press | First drop | 10% evap. | 10% | 20% | 50% | 90% | End point | Aver. b.p. | Per cent recov. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boston | 0.748 | 57.7 | 7.3 | 98 | 139 | 147 | 181 | 262 | 365 | 398 | 257 | 97.1 |
| New York | .746 | 58.2 | 6.9 | 100 | 142 | 148 | 183 | 264 | 364 | 400 | 259 | 97.5 |
| Washington | .749 | 57.4 | 7.1 | 97 | 144 | 150 | 186 | 267 | 368 | 402 | 261 | 97.2 |
| Pittsburgh | .749 | 57.4 | 8.0 | 95 | 142 | 150 | 187 | 270 | 373 | 406 | 263 | 96.9 |
| Cleveland | .742 | 59.2 | 7.3 | 98 | 144 | 150 | 184 | 266 | 370 | 406 | 260 | 97.1 |
| Atlanta | .746 | 58.2 | 7.4 | 99 | 138 | 144 | 177 | 267 | 367 | 401 | 259 | 97.4 |
| Chicago | .742 | 59.2 | 8.1 | 98 | 139 | 146 | 182 | 268 | 378 | 412 | 263 | 96.9 |
| New Orleans | .744 | 58.7 | 7.3 | 103 | 142 | 148 | 182 | 269 | 368 | 402 | 261 | 97.0 |
| St. Louis | .742 | 59.2 | 7.0 | 102 | 144 | 150 | 183 | 267 | 379 | 413 | 264 | 97.5 |
| Minneapolis-St. Paul | .741 | 59.5 | 7.1 | 102 | 144 | 151 | 184 | 266 | 377 | 411 | 263 | 97.3 |
| Omaha | .740 | 59.7 | 6.8 | 103 | 147 | 154 | 186 | 266 | 373 | 408 | 263 | 97.5 |
| Tulsa | .737 | 60.5 | 6.9 | 103 | 148 | 154 | 182 | 253 | 358 | 400 | 254 | 97.4 |
| Dallas | .744 | 58.7 | 6.5 | 101 | 148 | 153 | 187 | 268 | 375 | 413 | 264 | 97.6 |
| Denver | .744 | 58.7 | 6.5 | 92 | 138 | 143 | 180 | 261 | 366 | 400 | 255 | 97.4 |
| El Paso | .753 | 56.4 | 6.0 | 95 | 148 | 154 | 192 | 270 | 375 | 402 | 265 | 97.5 |
| Salt Lake City | .753 | 56.4 | 7.1 | 91 | 137 | 145 | 181 | 259 | 367 | 402 | 256 | 97.2 |
| Seattle | .752 | 56.7 | 7.8 | 98 | 140 | 147 | 185 | 265 | 380 | 411 | 263 | 97.2 |
| Los Angeles | .753 | 56.4 | 7.3 | 98 | 141 | 149 | 188 | 269 | 382 | 416 | 265 | 97.2 |
| San Francisco | .751 | 56.9 | 7.8 | 98 | 141 | 150 | 187 | 266 | 380 | 414 | 264 | 97.0 |
| Average | .746 | 58.2 | 7.2 | 98 | 142 | 149 | 184 | 265 | 372 | 406 | 261 | 97.3 |

**Premium Price Motor Fuels**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boston | 0.745 | 58.4 | 6.9 | 97 | 141 | 147 | 181 | 257 | 351 | 386 | 251 | 97.5 |
| New York | .743 | 58.9 | 7.2 | 99 | 140 | 146 | 177 | 255 | 357 | 392 | 252 | 97.3 |
| Washington | .754 | 56.2 | 6.9 | 98 | 144 | 149 | 178 | 250 | 359 | 400 | 251 | 97.5 |
| Pittsburgh | .748 | 57.7 | 7.1 | 100 | 145 | 151 | 180 | 253 | 355 | 391 | 251 | 97.5 |
| Cleveland | .746 | 58.2 | 8.6 | 95 | 133 | 140 | 173 | 261 | 370 | 405 | 257 | 97.0 |
| Atlanta | .745 | 58.4 | 6.4 | 105 | 147 | 152 | 181 | 255 | 347 | 387 | 251 | 97.5 |
| Chicago | .746 | 58.2 | 8.0 | 98 | 143 | 148 | 174 | 241 | 356 | 398 | 246 | 97.5 |
| New Orleans | .742 | 59.2 | 7.0 | 101 | 141 | 145 | 176 | 252 | 346 | 382 | 249 | 97.5 |
| St. Louis | .745 | 58.4 | 6.7 | 103 | 145 | 151 | 183 | 256 | 361 | 399 | 255 | 97.4 |
| Minneapolis-St. Paul | .741 | 59.5 | 6.9 | 101 | 142 | 146 | 173 | 243 | 365 | 405 | 249 | 97.7 |
| Omaha | .736 | 60.8 | 7.9 | 100 | 133 | 139 | 169 | 251 | 353 | 391 | 247 | 97.1 |
| Tulsa | .740 | 59.7 | 7.0 | 103 | 140 | 140 | 145 | 173 | 250 | 359 | 250 | 97.5 |
| Dallas | | | | No premium price motor fuels sampled in Dallas. | | | | | | | | |
| Denver | .734 | 61.3 | 7.8 | 83 | 125 | 132 | 160 | 235 | 335 | 381 | 232 | 97.2 |
| El Paso | .754 | 56.2 | 5.4 | 99 | 154 | 160 | 198 | 267 | 359 | 394 | 262 | 97.6 |
| Salt Lake City | .755 | 56.0 | 6.3 | 95 | 138 | 144 | 171 | 234 | 346 | 388 | 239 | 97.7 |
| Seattle | .750 | 57.2 | 7.2 | 96 | 140 | 146 | 180 | 251 | 349 | 393 | 249 | 97.4 |
| Los Angeles | .747 | 57.9 | 6.5 | 100 | 141 | 146 | 170 | 238 | 337 | 384 | 240 | 97.6 |
| San Francisco | .750 | 57.2 | 7.0 | 100 | 139 | 145 | 176 | 243 | 338 | 380 | 232 | 97.4 |
| Average | .746 | 58.2 | 7.0 | 99 | 141 | 146 | 176 | 250 | 352 | 392 | 248 | 97.4 |

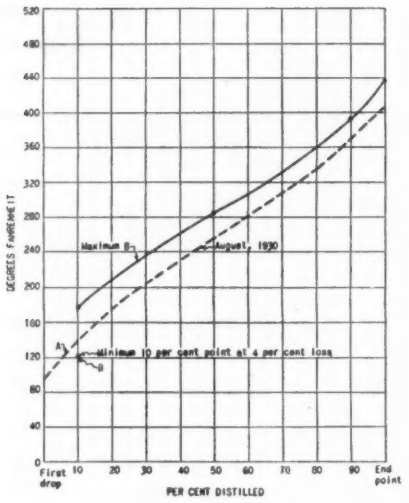



**Fig. 1—Distillation curve of average competitive price gasoline: A, Average for Aug., 1930; B, federal specifications, effective Sept. 11, 1929**

the corresponding volumes corrected for, or plus, distillation loss, and the ten per cent point read from the resulting curve.

"Table 2 gives the distribution of the samples according to vapor pressure. This tabulation shows that only 15 samples or 5.0 per cent of the total number had vapor pressures of 9.0 pounds per square inch or higher, and the highest vapor pressure found was 10.0 pounds for a premium price motor fuel from Chicago. Two hundred and fifty-one samples, or 84 per cent, had vapor pressures between 6.0 and 8.9 pounds per square inch. Thirty-three samples, or 11 per cent, had vapor pressures below 6.0 pounds per square inch."

An accompanying graph shows the average distillation temperatures of the competitive price gasolines collected in the survey, compared to the present U. S. Motor specification requirements. It may be noted that the average for the August samples is well within the government requirements.

Table 1 gives the average distillation range, etc., for each city in the survey, for both classes of fuels. Considerable uniformity in the average boiling points is noticeable. There is a variation of ten degrees F. for competitive gasolines, premium fuels showing a spread of 16 degrees. This uniformity appears also in the distillation temperature averages, especially up to and including the 50 per cent point. Percentages recovered are also practically the same for both classes of fuels, being slightly higher for premium fuels.

## A.P.I. Committee to Study Fuel Specifications

NEW YORK, Dec. 8.—Study of the proposed specifications for motor fuels of the Federal Specifications Board as they affect state gasoline standards will be made in the early future by a committee representing the board of directors of the American Petroleum Institute.

R. C. Holmes, The Texas Co., New York, is chairman of the committee, which was appointed by President Reeser at a session of the directors during the recent Chicago meeting. Members are: W. M. Irish, The Atlantic Refining Co., Philadelphia; J. Howard Pew, Sun Oil Co., Philadelphia; George R. Nutty, Gulf Refining Co., Pittsburgh; K. R. Kingsbury, Standard Oil Co. of California, San Francisco, and W. G. Skelly, Skelly Oil Co., Tulsa. The committee will work in conjunction with the institute's division of refining committee on testing methods and specifications.

Appointment of the committee was authorized after the directors had received and discussed a resolution adopted by the Western Petroleum Refiners Association, with affirmative recommendations by the general committee of the institute's division of refining, stressing the immediate need of studying the provisions of specifications, both federal and state, as they affect gasoline sold for general use.

It was explained that the Federal Specifications Board, in proposing to modify specifications for U. S. Motor Gasoline, had established as a protection against vapor lock a maximum vapor pressure requirement of 10 pounds per square inch. This is regarded by refiners as placing an undesirable restriction on the volatility of gasoline that may be sold to the public in the many states which have adopted U. S. Motor Gasoline as their standard.

## Refinery Chemists Meet at Tulsa

TULSA, Dec. 13.—One of a series of informal meetings of the refining section of the Oklahoma chapter of the American Chemical Society was held in Tulsa Dec. 13. The meeting, attended by refinery chemists, and students of refining engineering of the University of Tulsa, was held in the Engineering building of the university.

Papers read included one by E. W. Zublin, Texas Pacific Coal & Oil Co. on the manufacture of a low pour point bright stock; one by F. W. Padgett on paraffin waxes; and a paper by G. S. Mitchell, Barnsdall Oil Co. on effective cold tests for bright stocks. H. M. Smith, U. S. Bureau of Mines, was chairman.

## Table 2—Distribution of Samples According to Vapor Pressure

| CITY | Reid vapor pressure, pounds per square inch | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10.0 | 9.9 | 9.5 | 9.4 | 9.2 | 9.1 | 9.0 | 8.9–8.5 | 8.4–8.0 | 7.9–7.5 | 7.4–7.0 | 6.9–6.5 | 6.4–6.0 | 5.9–5.5 | 5.4–5.0 | Less than 5.0 | |
| Boston | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 | 4 | 6 | 2 | .. | .. | .. | 16 |
| New York | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 3 | 5 | 4 | 3 | .. | .. | .. | 16 |
| Washington | .. | .. | .. | .. | 1 | .. | .. | 1 | 3 | 2 | 1 | 5 | 4 | 3 | .. | .. | 20 |
| Pittsburgh | .. | .. | .. | 1 | .. | .. | .. | 1 | 4 | 4 | 3 | 2 | .. | 1 | .. | .. | 16 |
| Cleveland | .. | .. | .. | 2 | 1 | 1 | .. | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 1 | .. | 16 |
| Atlanta | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 4 | 2 | 5 | 3 | .. | 1 | .. | 16 |
| Chicago | 1 | 1 | 1 | 1 | .. | .. | .. | 3 | 4 | 3 | 2 | 3 | 1 | .. | .. | .. | 20 |
| New Orleans | .. | 1 | .. | .. | .. | .. | 1 | .. | 3 | 2 | .. | 2 | 3 | 1 | 1 | 1 | 15 |
| St. Louis | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | 3 | 10 | 2 | 1 | 1 | .. | 20 |
| Minneapolis-St. Paul | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 2 | 4 | 4 | 4 | .. | .. | .. | 16 |
| Omaha | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 | 1 | 5 | 3 | 2 | .. | .. | 1 | 16 |
| Tulsa | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 6 | 5 | 1 | 2 | .. | .. | 16 |
| Dallas | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 4 | 3 | 5 | 1 | .. | 16 |
| Denver | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | 1 | 2 | 2 | .. | .. | 8 |
| El Paso | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 | 4 | 3 | 1 | 12 |
| Salt Lake City | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 3 | 2 | 4 | 1 | .. | .. | 12 |
| Seattle | .. | .. | .. | .. | .. | .. | .. | 1 | 3 | 5 | 5 | 1 | 1 | .. | .. | .. | 16 |
| Los Angeles | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | 3 | 6 | 3 | 3 | .. | .. | .. | 17 |
| San Francisco | .. | .. | .. | .. | .. | .. | .. | 4 | 3 | .. | 2 | 4 | 1 | .. | .. | .. | 14 |
| Total | 1 | 2 | 1 | 4 | 2 | 2 | 3 | 16 | 31 | 41 | 54 | 66 | 43 | 21 | 8 | 3 | 298 |

# Small Wells Present Large Problem In Proration Adjustment Attempt

By Lawrence E. Smith

N. P. N. STAFF WRITER

TULSA, Dec. 13

THE week closed with no solution in sight for the problem of the small wells of Kansas and Oklahoma whose oil the Prairie Oil & Gas Co. will discontinue buying Jan. 1. Almost daily meetings have been held by the state-wide proration committee and the subcommittee created the past week to prepare a proration plan for the first quarter of 1931.

A meeting of the operators who own the small properties compactly located in Nowata, Rogers, Washington and Osage counties, of Oklahoma, and the old districts of Kansas included in the counties of Chautauqua, Montgomery, Wilson, Allen Neosho and Elk, was called for Tuesday, Dec. 16. Leaders in issuing the call were J. B. Milan Chelsea, Okla.; Eugene B. Lawson, Tulsa and H. G. Ellis, Bartlesville. The first named are individual producers, Mr. Ellis is Mid-Continent manager for the Wieser Oil Co.

It appears more and more that the problem is most acute in this district, because it was so largely dependent upon the Prairie. This was the territory where the company made its start, as the Mid-Continent industry spread over more country, so did the Prairie, retaining always its hold on the early-found pools. No other company is physically equipped to handle this territory. Prairies has the pipelines, pumping facilities, organization and records adequate to purchase and transport the oil. Duplication of its system would run into millions of dollars.

### High Costs a Handicap

The Prairie Pipe Line Co. stands ready to continue gathering the oil if the producers can find a purchaser. And right there is where the hitch now comes, finding a purchaser. It is the highest cost-of-gathering production in the Mid-Continent. Another major purchaser who stepped in to relieve the situation by taking the oil and paying the Prairie its 20 cents per barrel gathering costs would be merely playing the Good Samaritan.

Other territories where the Prairie is withdrawing are slowly being gotten into shape where the principle of ratable purchases will prevail. The Seminole district leases that have been served by the Prairie are now assured of connections. Umpire Collins met with the purchasing companies the past week and called off one by one the leases that were homeless. Each purchaser indicated the ones his company stood ready to serve and thus they were disposed of shortly. The umpire says that southern Oklahoma is being whipped into shape where no properties will be entirely shut in and the same thing is happening in the general Okmulgee district.

### Check Ownership of Leases

In attempting to fill the gap left by the Prairie's withdrawal, it was necessary to make a sharp division of the properties as to ownership. There are those belonging to companies who are refiners and marketers as well as producers and those who are producers only. The general plan is to help first the producer who has no refinery.

In November the Prairie bought an average of 58,764 barrels daily in Oklahoma. Deducting its own production and that belonging to integrated companies, there was left 26,589 barrels daily from properties of companies that are producers only, many of them small companies and individuals. In Kansas its purchases totalled 17,923 barrels daily. Of this amount 10,037 came from the leases of those who are producers exclusively.

### Phillips Stops Buying

In Kansas the state wide proration committee met and agreed that the outlet of the state—the market demand for crude—was about 90,000 barrels daily. Some purchasers believe that is a little high. Another buyer, the Phillips Petroleum Co., announced its withdrawal as a purchaser in Kansas during the week, effective Dec. 15. About 800 barrels per day is cut off. The company through the combined production of the Phillips and what formerly were the Independent Oil & Gas Co. properties, realizes the requirements of its Kansas City refinery.

The principle of ratable production from properties in Kansas has sustained several shocks recently. The state has no law on the subject and proration has been carried on as a voluntary affair. The Voshell pool has been in worse shape than any other field, some properties having no outlet for production at all. An attempt is to be made to get the coming Kansas legislature to enact a law similar to the Oklahoma statute.

As for the Oklahoma method of handling proration, attacks persist. During the past week the corporation commission fined the Marco Oil & Royalty Co. and the Century Petroleum Co., of Oklahoma City, for violations of its order applicable to the Oklahoma City pool. The hearings were on citations issued some time ago.

These companies gave the commission a new battle when they opened their wells to production Dec. 8 and produced

# These
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# *Will Pay for Themselves*

***Type 36***
***Quick Hose Coupling***

Type 36 has an adapter which is simply attached to the hose end of the faucet and left there. The *Coupling* is attached to the *hose* and left *there*. Tight connections are then made by just seating the adapter in the *Coupling* and making a part turn with the wings. Just a few seconds is all the time that is required.

**WITH these remarkable new Wheaton Quick Hose Couplings, it is no longer necessary to screw the delivery hose on and off the faucet every time a connection is made. Instead, connections are made by simply a part turn of the coupling, as explained under the illustrations. In addition, there is no longer any danger of stripping or wearing down the threads on the faucet or in the coupling. And the time required in making deliveries is reduced to a minimum. This *double saving*—of *threads* and of *time*—returns the cost many times over.**

**Read how quickly and easily each style operates—Type 34 Folding Handle Quick Hose Coupling, shown at the right; Type 36, pictured at the left. See how vast an improvement they make over all couplings hitherto used. Then send for a sample of one or both. Give it a 30 or 60 days' trial. If it does not prove entirely satisfactory, you may return it for credit or refund. Illustrated circulars will gladly be sent to you on request.**

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***Type 34***
***Folding Handle***
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**slips right into your hose carrier**

With Type 34, a special spout is simply screwed into the faucet and *left there*. The *Coupling* is attached by simply slipping it over the lugs on the spout, and making a part turn with the handle. A ball and slot holds the *openings for the lugs* ready for quick connection—no fumbling, no loss of time. Type 34, with its *folding handles*, is made *especially* to slip into your hose carrier.

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them until Dec. 11 when the state shut them down by injunction issued by a state district court. They promptly noted their intention to go into federal court. The latter has a chance to become as busy on proration as the commission itself.

**Wilcox Protests Action**

In addition to applying for injunctions the state asked that receivers be named for these companies and for the Wilcox Oil & Gas Co. and in so doing it promptly drew the fire of the latter company. The Wilcox company, through its executive vice president, George A. Dye, issued a statement explaining its position. It was cited by the commission for violation of proration in the West Asher pool and a hearing on that charge was held Nov. 25. Decision was deferred and, said Mr. Dye, the commission said it would notify the company of the date on which it would make its ruling. That, he said, had not been done but the commission went into court and asked for receiver and injunction.

"The publicity this action has given our company is damaging to a great extent, due to the fact that it is alleged that a receivership is being asked for the company as a whole, which under the law, as the writer understands it, is in error," said Mr. Dye. "If any receivership can be appointed through the law for violation of the proration order, it would only apply to the property which it alleges was in violation, and not to the company as a whole.

"The Wilcox Oil & Gas Co., has always co-operated in every respect that it possibly could and exist. In every depression which the oil business has suffered one of the first things this company did was to reduce its drilling because it was under the impression that was the only method by which to prevent overproduction. This particularly applies to the drilling of unnecessary wells. This company has advocated and practiced this for the last 10 years. At the present time it has only one well drilling in the entire Mid-Continent field and that well was started prior to this general condition.

"We allege that if the corporation commission has the power to order proration as a possible preventative of waste, it would also have the power to restrict the drilling of unnecessary wells throughout the state, for after all, the real cause of overproduction is the extensive drilling and apparently now, after the majority of the companies have developed as far as they wanted to, there is an attempt being made to have an order issued to restrict drilling. . . . .

"Our company's position is this—we have a refinery at Bristow which has a capacity of 6000 barrels a day, but we are only refining, in order to cooperate with the industry, 3000 barrels per day. In order to handle that amount of crude through our refinery and meet our contractural obligations for our by-products, it was necessary to produce our own crude to that extent. The low refined market has eliminated the possibility of purchasing crude at present market prices and refining and marketing it without loss, but crude can be produced from a company's own wells, refined and marketed without loss. It was therefore necessary in order to keep our refinery running, to produce more crude from one of our leases than the proration order allowed, and for that reason we filed application . . . . with the corporation commission for relief.

**Would Shut Down Refinery**

"Under the present proration, if we have to adhere to it to the letter, we will be forced to shut down our refinery, throwing some 57 men out of employment . . . ."

Mr. Dye's reference to the "attempt" to obtain a restriction of drilling apparently was prompted by the resolution adopted by the state-wide proration committee of the Mid-Continent Oil & Gas Association. It declared that "it is the opinion of this committee that it is unfair for operators to drill unnecessary wells and if they persist in doing so, the purpose of the commission and of the operators to prevent waste and demoralization will be embarrassed if not frustrated.

"The present relation between supply and demand plainly indicates that no new wells should be drilled in the state of Oklahoma during the first quarter of 1931, and we believe that the corporation commission should specifically limit drilling in its next order and should receive the absolute co-operation of the operators in making and enforcing such an order."

**Ratable Takings Ordered**

How the commission would stop drilling was not indicated. That body has itself asserted several times that it has no authority in the matter. It is empowered to prevent waste and the supreme court of the state has recently held that in preventing waste it can compel the ratable taking of oil from a common pool. As a matter of fact, the commission the past week made a move in that direction. One producer in the Mission pool was without a market for his oil. The commission notified other producers that they would have to shut down until that operator found an outlet. A connection was made the following day, so no properties were shut down.

The commission does, at this time, limit drilling, in a way. It has ordered that new producing wildcats be held to 50 barrels per day. The theory of that is that it prevents waste in other pools whose market outlet would be divided with the new pools.

It may be inferred from all the foregoing discussion that proration is the sole subject under consideration in the Mid-Continent. That is just about the situation. So strong has the discussion become that Alvin Richards, president of the Oklahoma-Kansas division of the Mid-Continent association, issued statement saying that it is "proration or demoralization."

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**Asks Oil Duty of $1.25 a Barrel**

WASHINGTON, Dec. 15.—Although it may be but a gesture, coming as it does at the short session of congress in which only routine things are generally done, Representative Sproul of Kansas has introduced a bill, H. R. 14814, to place a duty of $1.25 a barrel of crude, 50 cents a barrel on fuel oil, a "by-product from the refining of crude petroleum" is the description, and 50 per cent ad valorem on the refined products.

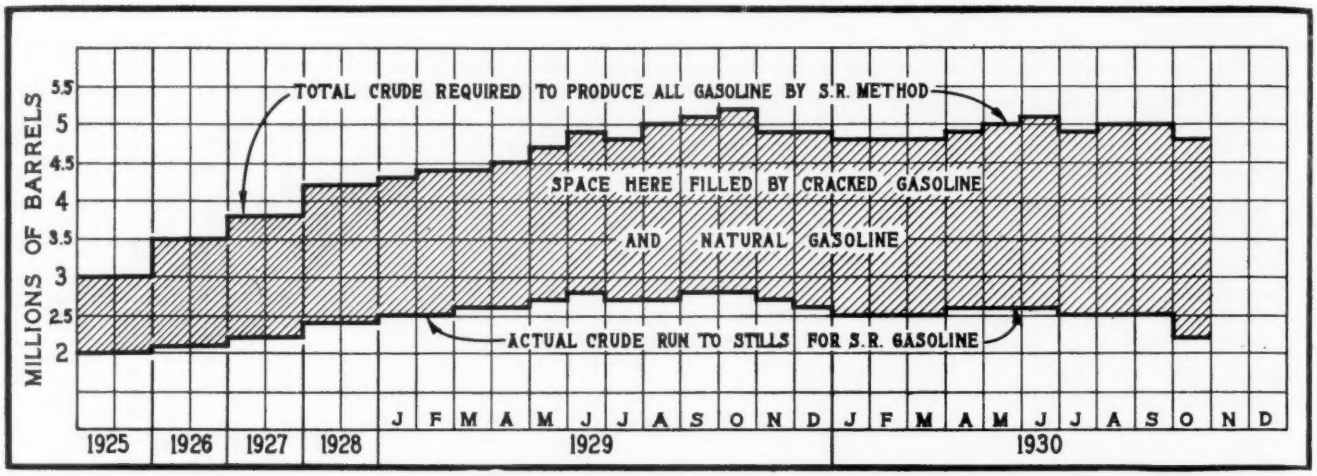


**Chart illustrating how crude demand has been lessened by natural and cracked gasoline production**

# Cracked and Natural Gasolines Continue Cutting Demand for Crude Oil

TULSA, Dec.—A QUESTION frequently heard in these days of rigid proration is "Where has the market for crude gone?"

Up to the end of October the United States fields had produced in 1930 a total of 761,106,000 barrels, a drop of 86,542,000 barrels from the same 10 months of 1929.

While it is true that imports have played a part in the overall reduction in demand for domestic crude *wthin this country*, exports continue this year to exceed imports.

Of greater weight is the increase in the efficiency of refining. The increase in cracking operations and the greater part played by natural gasoline have brought the percentage of straight run gasoline of the total gasoline produced from 66.02 per cent in 1925 to 49.35 per cent in October of this year.

A statistical study of the part played by cracking and production of gasoline from natural gas was made last week by Clarel B. Mapes, technologist for the Mid-Continent Oil & Gas Association. These analyses, on which the accompanying graph was based are reproduced herewith.

"Recent drastic curtailment of crude purchases have initiated queries and much speculation as to the causes for the apparent disappearance of demand for the normal volume of crude petroleum," said Mr. Mapes. "A cursory investigation of refinery operations and the production of gasoline tends to throw some

## Analysis of Gasoline Production

(Daily Average Barrels)

| Year | Total Crude Run to Stills in U. S. | Per cent S-R Gasoline Recovery | Total U. S. Gasoline Production | Straight Run Gasoline Produced | Per Cent of Total | Cracked Gasoline Production | Per Cent of Total | Natural Gasoline Used | Per Cent of Total | Bbls. Crude Req'd to Produce One Bbl. S-R Gasoline |
|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | 2,027,178 | 23.16 | 711,236 | 469,540 | 66.02 | 187,899 | 26.42 | 53,797 | 7.56 | 4.317 |
| 1926 | 2,134,970 | 22.88 | 821,189 | 488,498 | 59.49 | 256,811 | 31.27 | 75,879 | 9.24 | 4.371 |
| 1927 | 2,270,781 | 23.77 | 905,301 | 539,855 | 59.63 | 277,331 | 30.63 | 88,115 | 9.73 | 4.207 |
| 1928 | 2,495,342 | 24.00 | 1,029,904 | 598,820 | 58.14 | 334,847 | 32.51 | 96,238 | 9.35 | 4.167 |
| 1929: January | 2,542,742 | 25.27 | 1,106,452 | 642,485 | 58.07 | 354,032 | 32.00 | 109,935 | 9.93 | 3.957 |
| February | 2,572,536 | 25.34 | 1,118,286 | 651,857 | 58.29 | 354,250 | 31.68 | 112,179 | 10.03 | 3.946 |
| March | 2,603,484 | 25.19 | 1,116,968 | 655,774 | 58.71 | 335,484 | 30.04 | 125,710 | 11.25 | 3.970 |
| April | 2,681,967 | 25.35 | 1,155,033 | 679,666 | 58.84 | 354,800 | 30.72 | 120,567 | 10.44 | 3.945 |
| May | 2,723,226 | 24.73 | 1,170,645 | 673,516 | 57.53 | 378,161 | 32.30 | 118,968 | 10.17 | 4.044 |
| June | 2,813,333 | 23.77 | 1,186,867 | 668,733 | 56.34 | 399,867 | 33.69 | 118,267 | 9.97 | 4.207 |
| July | 2,771,581 | 25.31 | 1,219,839 | 701,549 | 57.51 | 396,806 | 32.53 | 121,484 | 9.96 | 3.951 |
| August | 2,797,839 | 24.75 | 1,244,839 | 692,420 | 55.62 | 413,548 | 33.22 | 138,871 | 11.16 | 4.040 |
| September | 2,803,300 | 24.08 | 1,241,400 | 675,033 | 54.38 | 426,767 | 34.38 | 139,600 | 11.24 | 4.153 |
| October | 2,851,290 | 24.55 | 1,286,548 | 700,064 | 54.41 | 430,710 | 33.48 | 155,774 | 12.11 | 4.073 |
| November | 2,702,033 | 25.00 | 1,245,333 | 675,533 | 54.25 | 438,767 | 35.23 | 131,033 | 10.52 | 4.000 |
| December | 2,602,032 | 24.19 | 1,206,548 | 629,322 | 52.16 | 439,710 | 36.44 | 137,516 | 11.40 | 4.134 |
| 1930: January | 2,585,903 | 24.16 | 1,165,581 | 624,678 | 53.59 | 419,677 | 36.01 | 121,226 | 10.40 | 4.139 |
| February | 2,586,214 | 24.89 | 1,196,429 | 643,751 | 53.81 | 426,857 | 35.68 | 125,821 | 10.51 | 4.018 |
| March | 2,588,774 | 24.98 | 1,199,677 | 646,548 | 53.89 | 435,290 | 36.28 | 117,839 | 9.83 | 4.003 |
| April | 2,681,133 | 25.18 | 1,255,967 | 675,101 | 53.75 | 447,933 | 35.66 | 132,933 | 10.59 | 3.971 |
| May | 2,698,290 | 24.62 | 1,252,194 | 664,226 | 53.04 | 469,097 | 37.46 | 118,871 | 9.50 | 4.062 |
| June | 2,691,567 | 24.18 | 1,235,967 | 650,834 | 52.65 | 455,833 | 36.88 | 129,300 | 10.47 | 4.136 |
| July | 2,536,903 | 24.67 | 1,215,000 | 625,936 | 51.52 | 454,387 | 37.40 | 134,677 | 11.08 | 4.054 |
| Aug. | 2,557,710 | 23.88 | 1,206,774 | 610,710 | 50.61 | 466,645 | 38.67 | 129,419 | 10.72 | 4.188 |
| September | 2,531,667 | 23.99 | 1,217,467 | 607,334 | 49.89 | 475,933 | 39.09 | 134,200 | 11.02 | 4.168 |
| October | 2,387,613 | 24.72 | 1,196,065 | 590,258 | 49.35 | 465,387 | 38.91 | 140,420 | 11.74 | 4.045 |

# Gasoline Production in Equivalent Crude Oil

(Based on Straight-Run Gasoline Recovery Factor)

(Daily Average Barrels)

| Year | Total Domestic Crude Required To Produce All Gasoline by S-R Methods | Foreign Crude Run to Stills | Total Crude Required To Produce All Gasoline by S-R Methods | Actual Crude Run to Stills for S-R Gasoline | Per Cent of Total | Equivalent Crude Requirements to Replace Cracked Gasoline | Per Cent of Total | Equivalent Crude Requirements to Replace Natural Gasoline | Per Cent of Total |
|---|---|---|---|---|---|---|---|---|---|
| 1925 | 2,957,325 | 113,255 | 3,070,580 | 2,027,178 | 66.02 | 811,160 | 26.42 | 232,242 | 7.56 |
| 1926 | 3,465,972 | 123,186 | 3,589,158 | 2,134,970 | 59.49 | 1,122,521 | 31.27 | 331,667 | 9.24 |
| 1927 | 3,670,936 | 137,277 | 3,808,213 | 2,270,781 | 59.63 | 1,166,732 | 30.63 | 370,700 | 9.73 |
| 1928 | 4,079,695 | 211,978 | 4,291,673 | 2,495,342 | 58.14 | 1,395,307 | 32.51 | 401,024 | 9.35 |
| 1929: January | 4,171,370 | 207,290 | 4,378,660 | 2,542,742 | 58.07 | 1,400,905 | 32.00 | 435,013 | 9.93 |
| February | 4,195,898 | 217,107 | 4,413,005 | 2,572,536 | 58.29 | 1,397,811 | 31.68 | 442,658 | 10.03 |
| March | 4,221,069 | 213,355 | 4,434,424 | 2,603,484 | 58.71 | 1,331,871 | 30.04 | 499,069 | 11.25 |
| April | 4,335,290 | 222,000 | 4,557,290 | 2,681,967 | 58.84 | 1,399,686 | 30.72 | 475,637 | 10.44 |
| May | 4,501,229 | 232,387 | 4,733,616 | 2,723,226 | 57.53 | 1,529,283 | 32.30 | 481,107 | 10.17 |
| June | 4,750,089 | 243,033 | 4,993,122 | 2,813,333 | 56.34 | 1,682,240 | 33.69 | 497,549 | 9.97 |
| July | 4,612,474 | 206,871 | 4,819,345 | 2,771,581 | 57.51 | 1,567,781 | 32.53 | 479,983 | 9.96 |
| August | 4,826,709 | 202,903 | 5,029,612 | 2,797,839 | 55.62 | 1,670,734 | 33.22 | 561,039 | 11.16 |
| September | 4,955,722 | 199,700 | 5,155,422 | 2,803,300 | 54.38 | 1,772,363 | 34.38 | 579,759 | 11.24 |
| October | 5,057,201 | 182,839 | 5,240,040 | 2,851,290 | 54.41 | 1,754,282 | 33.48 | 634,463 | 12.11 |
| November | 4,791,300 | 189,933 | 4,981,233 | 2,702,033 | 54.25 | 1,755,068 | 35.23 | 524,132 | 10.52 |
| December | 4,821,090 | 167,194 | 4,988,284 | 2,602,032 | 52.16 | 1,817,761 | 36.44 | 568,491 | 11.40 |
| 1930: January | 4,669,765 | 164,935 | 4,834,700 | 2,585,903 | 53.59 | 1,737,043 | 36.01 | 501,754 | 10.40 |
| February | 4,646,481 | 160,393 | 4,806,874 | 2,586,214 | 53.81 | 1,715,111 | 35.68 | 505,549 | 10.51 |
| March | 4,654,885 | 148,065 | 4,802,950 | 2,588,774 | 53.89 | 1,742,466 | 36.28 | 471,710 | 9.83 |
| April | 4,820,719 | 167,033 | 4,987,752 | 2,681,133 | 53.75 | 1,778,742 | 35.66 | 527,877 | 10.59 |
| May | 4,905,390 | 181,226 | 5,086,616 | 2,698,290 | 53.04 | 1,905,472 | 37.46 | 482,854 | 9.50 |
| June | 4,936,577 | 175,100 | 5,111,677 | 2,691,567 | 52.65 | 1,885,325 | 36.88 | 534,785 | 10.47 |
| July | 4,750,614 | 174,355 | 4,924,969 | 2,536,903 | 51.52 | 1,842,085 | 37.40 | 545,981 | 11.08 |
| August | 4,872,284 | 181,742 | 5,054,026 | 2,557,710 | 50.61 | 1,954,309 | 38.67 | 542,007 | 10.72 |
| Sept. | 4,911,102 | 163,600 | 5,074,702 | 2,531,667 | 49.89 | 1,983,689 | 39.09 | 559,346 | 11.02 |
| October | 4,668,005 | 170,097 | 4,838,102 | 2,387,613 | 49.35 | 1,882,490 | 38.91 | 567,999 | 11.74 |

light on the situation. Curtailment of the total output of refinery gasoline, has, of course, been the predominant factor in the lessening demand for crude oil. However, other tendencies are apparent and may be worthy of contemplation.

"Crude runs to stills in May, 1930, averaged 2,698,290 barrels per day, while in October, 1930, the runs averaged 2,387,613 barrels per day. This is a curtailment or net decrease of 310,677 daily average barrels of crude run to stills.

"Since Jan. 1, 1929, cracked gasoline has increased from 32 per cent to approximately 39 per cent of the total volume of gasoline produced. In equivalent crude required to make an equal amount of straight-run gasoline, cracked gasoline replaced 1,400,905 barrels of crude demand in January, 1929, while in September, 1930, cracked gasoline replaced 1,983,689 barrels of crude demand. Thus by increasing cracking facilities, and accordingly the volume of oils cracked, an automatic curtailment in crude demand of 582,784 barrels per day has been brought about. This partly answers the question of why lesser amounts of crude are needed as gasoline demand increases.

"As the percentage of cracked gasoline increased, the percentage of straight-run gasoline decreased. The volume of straight-run gasoline produced remained approximately the same, however, until May, 1930, when a noticeable decline commenced. Straight-run gasoline produced from May to October directly reflected the curtailment in refinery runs of crude.

"The use of natural gasoline tends to increase, although the monthly percentages fluctuate materially. This increased use of natural gasoline has caused a displacement of crude utilized. In January, 1929, natural gasoline displaced 453,013 barrels of crude demand, while in October, 1930, it displaced 567,999 barrels of crude demand, a net increase in displacement in 22 months of 132,986 barrels of crude demand per day."

## Seeks to Prevent Conflict In Kettleman Plans

WASHINGTON, Dec. 15.—Secretary Wilbur has taken steps to prevent a conflict between the Kettleman Hills unit operation plan upon which he has been working for months and any decree that may be issued in the California gas conservation law litigation. A decree giving effect to the decision of the court of appeals at Los Angeles must be issued soon. It was the understanding at the Department of Interior at the end of last week that the subject would be discussed by the judge and the victorious lawyers some time this week.

Acting on that understanding Secretary Wilbur addressed the lawyers, by wire, with a copy of his message to William Reinhardt and James Bennett suggesting that the form of the decree and the unit plan in respect of the development of Kettleman Hills be considered together and that the decree of the court be not made effective, in so far as it relates to the Kettleman Hills part of California before February 1. That day will be the one after the authority of the Secretary of the Interior to enter into an agreement for the unit operation of a field in which government lands are involved will expire.

Dr. Wilbur asked that in view of the fact that, unless care were taken the decree of the court might establish a gas-oil ratio for use in the Kettleman Hills part of the state that would interfere with what Dr. Wilbur thought desirable or could get for Kettleman Hills.

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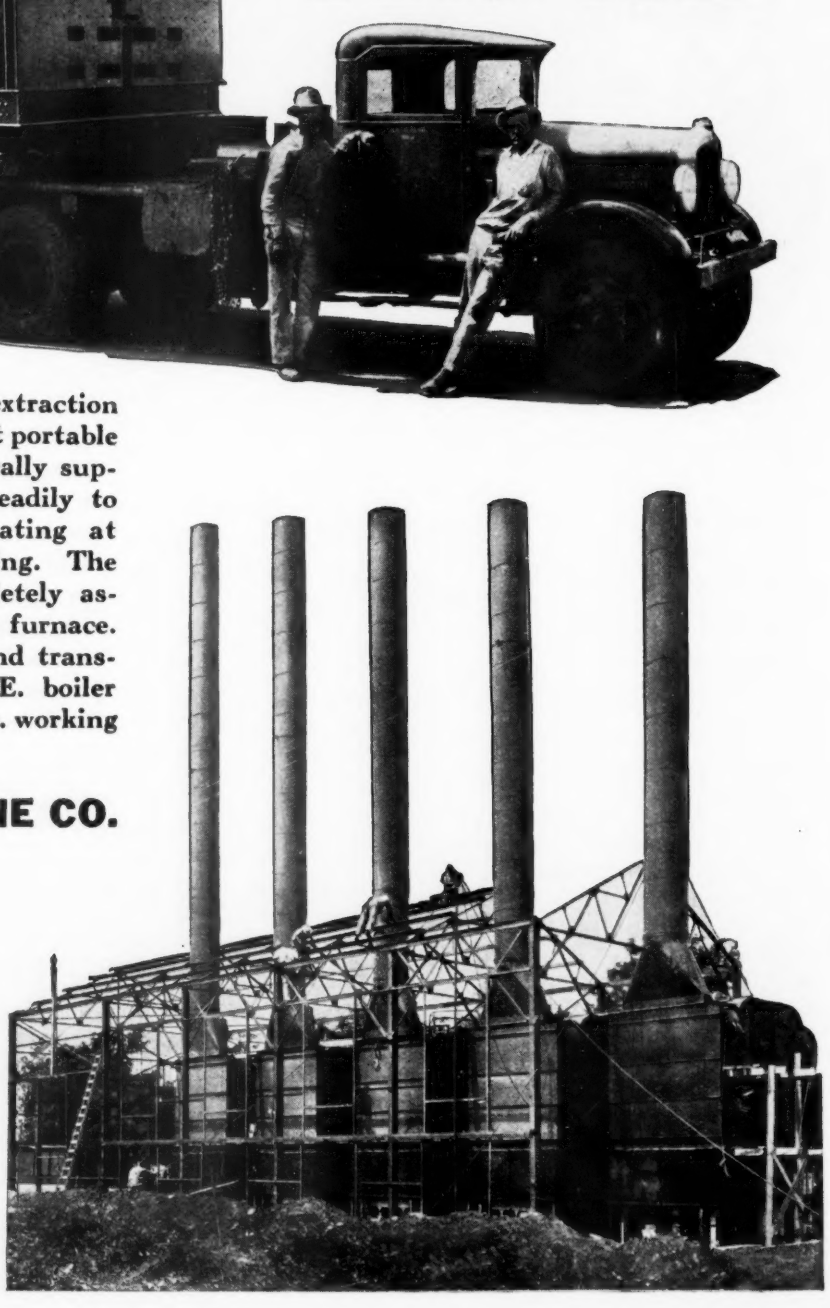

**COMMENTING upon the oil** tariff, and hooking into the fight on confirmation of Chief Justice Hughes, the Tulsa Tribune says:

"Mr. Hughes was condemned because he wrote an opinion for Henry L. Doherty in which he asserted that the proration agreements proposed by the A. P. I. were unconstitutional."

That sort of thing can't be done accidentally. A special kind of genius is required to garble history so thoroughly.

* * *

**Several department heads of** the Midwest Refining Co. will make the move from Casper to Denver at the time George H. Jaques, vice-president does. H. W. Ladd, in charge of equipment; A. G. Fidel, purchasing agent; C. F. Young, assistant purchasing agent; J. J. Zorichak, petroleum engineer are among those who will be found at the general offices hereafter.

* * *

**F. A. Leovy, president of the** Gulf Production Co., visited Tulsa last week in the course of a trip to the various Gulf subsidiary company headquarters.

* * *

**J. C. Denny, who has had** charge of the Skelly Oil Co.'s land department in Kansas for several years, has been transferred to New Mexico. He will fill a similar position in that state, headquarters in Roswell. He has been in Wichita the past year.

* * *

**Died: John I. Cary, Okmul**gee, Okla., oil producer, from the accidental discharge of his shotgun while on a hunting trip.

* * *

**W. W. Larsh, division geolo**gist at Wichita for the Dixie Oil Co., has been elected president of the Kansas Geological Society. Other officers are E. A. Wyman, Amerada Petroleum Corp., vice-president; Paul Whitney, Mid-Continent Petroleum Corp., secretary-treasurer. E. P. Philbrick, of the Magnolia Petroleum Corp., was elected a director.

* * *

**Clarence L. Wingate has re**signed as assistant to John A. Wolfe, Oklahoma superintendent for the Prairie Oil & Gas Co., to become production superintendent for the Droppleman Drilling Co., Wewoka.

* * *

**The Cater Construction Co.,** Kansas City, has been given contract by the Continental Oil Co. for the construction of the company's 8-inch oil line from Oklahoma City to Tonkawa, Okla.

* * *

**The proration hearings be**fore the Oklahoma corporation commission occasionally develop moments of humor. At a recent one George Ramsey, Tulsa attorney, appeared for the Champlin Refining Co. in protest on the proration of Champlin's properties. The hearing lasted all day and until 10 o'clock at night. At that hour the commission announced that it would give its decision the next morning.

"Will you note my exception to your findings now?" asked Mr. Ramsey.

* * *

**With the December issue the** Loreco Diamond, publication of the Louisiana Oil Refining Co., was combined with Arknatco, monthly journal of the Arkansas Natural Gas Co. Since acquisition of control of the Louisiana company by the Cities Service interests the two companies are being operated under one management.

**E. A. Stiller, chief geologist** of the Arkansas Natural Gas Co., Shreveport, has been made head of the land and lease department of the company. Mr. Stiller has been with the Arkansas Natural since 1924, prior to which time he was with the Mexican Eagle Oil Co. in Mexico and the Shell Petroleum in Texas.

* * *

**Died: In Tulsa, William J.** Gregg, general counsel for Twin State Oil Co. and Sun Oil Co. He was 66 years old. A member of the Tulsa bar since 1905, he was one time United States attorney for the eastern district of Oklahoma. His widow and one granddaughter survive him. Funeral services were held in Tulsa and burial was in Pittsburgh, Kans.

* * *

**Died: In Kansas City, Willard** Foster, well known royalty dealer of Tulsa. He was 59 years old. He left a family, his widow and two sons.

* * *

**Pat Malloy, of Tulsa, has been** retained by the Sinclair Oil & Gas Co. as special counsel. He will, according to E. H. Chandler, general counsel, be the company's official representative "before the various committees, commissions and producers dealing with the problem of proration." He will continue to supervise the affairs of Malloy & Co., producing firm, although he has relinquished the presidency to which E. T. Kincade has succeeded. Mr. Malloy has been active in the Independent Petroleum Association of America and in the campaign for oil tariff which that association has vigorously sponsored. He is a former president of the Western Petroleum Refiners Association and has been identified in the industry in all its branches.

Refinery of the Tidewater Oil Company at Bayonne, N. J., users of genuine Wrought Iron pipe.

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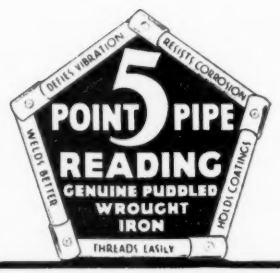


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# Wewoka Townsite Gets Two Wilcox Wells, North Carr City One Failure

Staff Special
TULSA, Dec. 13

THE Wewoka area of Seminole and Hughes counties, in Oklahoma, was the hottest spot in Mid-Continent production news in the past week. Neighboring districts had several interesting reports, but they were largely of routine nature and more or less disappointing. The Oklahoma City poll had the usual good crop of large completions with one well challenging the field record.

The Ritz pool was again the most active area in the state of Kansas though two of the large completions started off cutting from one to three per cent. In Sedgewick county, the East borough pool had a failure on its south end, which eliminates the possibility of an extension in that direction. The rest of the state, particularly in the western wildcat territory, was quiet.

There was little of interest in the Texas Panhandle outside of the proration plans which will cut at least 20,000 barrels per day from the allowable total. This should bring the daily average production down to about 60,000 barrels.

### Wewoka District

Both the shallow and the deep pays in the Wewoka district of Seminole and Hughes counties, Okla., brought in good wells during the week. Most of the production in the old Wewoka pool has been in the shallower Cromwell sand. Some months ago Wilcox production was found north of the main pool and since then the townsite area has seen a hot play in this lower horizon. Both sands have had some good completions in the last few weeks and there are 13 active locations at the present time.

In the townsite area of 30-8-8E, there were three producers brought in during the past week. The largest of these, which is also the best that has yet been found in the territory, was the No. 2 Davis, NE SE SW, of the Mid-Kansas Oil & Gas Co. This well, bottomed in the Wilcox at 3972, flowed 1845 barrels in three hours. It is the west offset to the discovery well of the Deep Rock Oil Corp.

In the same section, the Burke Greis Oil Co., No. 2 Henshaw, NW NE SW, had a record that is almost as good. The Cromwell pay was logged from 3138 to 3158 and the well gauged 2475 barrels in the first 12 hours. The Deep Rock Oil Corp., No. 2 Douglas "50a," SW SW NE of Sec. 30, is a Wilcox producer, bringing the total wells in that horizon to three. This formation was logged from 3932 to 3970 and the initial 14-hour gauge was 1230 barrels.

The Wewoka townsite area presents an interesting study in subsurface geology. It seems that a pronounced fault crosses it. An indication of just how irregular the formations are logging is found in the records of the No. 2 Douglas "50a," and the No. 2 Smith of the Deep Rock Oil Corp. In the former there was but 10 feet of Mayes lime as compared to 100 feet in the latter. The reverse was true of the Hunton lime, the figures being 140 feet and 92 feet respectively. These wells are but two locations apart.

The north Carr City area had its first failure this week in the Pine et al No. 1, SE NW SW, 3-8-5E. On the southwest corner of this new small pool, this well logged the upper Wilcox at 4120, and in the Simpson dolomite from 4122 to 4125 had a hole full of water. The 60 barrel oil show found in the Viola at 4013 does not seem to be holding up and the test is now considered a dry hole. The Carr City pool is the most active in the whole of the Greater Seminole district, having half of the total of 10 drilling operations.

The Sacred Heart areas discovery in 5-6-5E has been drilling ahead without an increase of oil in the lower formations and does not now seem to be making good on its earlier promises. Originally thought to be a new pool opener when it started off at 50 barrels an hour several weeks ago, its deepening record has not supported the idea. The well is the Robinson & Hicks No. 1 Crouch, and its first pay was in the Simpson dolomite from 4266 to 4277, Topping the Wilcox at 4398, drilling was stopped at 4404 with a hole full of water and oil. It is probable that it will be plugged back to the upper pay and tested.

### Oklahoma City

Though the number of active operations continues to lessen each week in the Oklahoma City pool, first reports, even in these dull times make up a portion of the difference. There were seven made this week. The prolific sand area at the north end of the pool contributed two new ones that gauge better than 60,000 barrels each and some crooked hole data during the past week.

The largest of the above wells was the Skelly Oil Co., No. 1 Hurt, SW NW NW NW, 2-11-3, which made 11,458 barrels in three hours and 45 minutes. The pay was from 6373 to 6539. The No. 1 Alexander of the Plains Petroleum Co., in the same quarter section, was almost as large with an initial gauge of 6003 barrels in two hours and 10 minutes. There were several others almost in the same class and all are Wilcox sand producers.

Some idea of just how close the drilling is in the townlot area is indicated in the dispute over whose hole is crooked near the well of Oils Inc., in the SE SW NW, 2-11-3W. It was necessary for this well to shut down at a total depth of 4690 due to having come in contact with a string of casing in an adjoining well. A hole survey shows the well to

be about as near perpendicular as a well can be, so it seems likely that one of the 40,000-barrel neighboring wells has wandered under the tiny lease. The wells are but little over 75 feet apart.

### Kansas

Two completions in the Ritz pool of McPherson county, Kansas, were considerably better with a little deepening. Both of these wells, The Texas Co. No. 4, SE NE NE, 12-20S-2W, and the Palmer, No. 1, SW NW NW, 7-20S-1W, were in the pays a week ago and giving promise of making producers. The former was deepened in the Chat pay to a new total depth of 2988 and flowed 1510 barrels in 12 hours against a 150-pound back pressure. It is cutting about 2.5 per cent. The Palmer well at exactly the same depth made only 795 barrels in 12 hours, cutting one per cent.

Three quarters of a mile south of the Eastborough pool in Sedgewick county, the No. 1 Drollinger of the Blackwell Petroleum Corp., NE SW NW, 31-27-2E, is a dry hole at 3275. The Wilcox, topped at 3266 did not have even an oil show. This well limits the possibilities of a southern extension for the Eastborough pool.

### Texas Panhandle

Most of the week's completions in the Texas Panhandle were gas wells. A total of 235,500,000 cubic feet is represented in five of the new wells all of which were widely scattered in the several counties. There were seven first reports, two small producers and one dry hole in the area making altogether an uneventful week.

## Gulf's New Pipeline Now Being Filled

TULSA, Dec. 13.—The new line of the Gulf Pipe Line Co. of Pennsylvania, from the Glenpool district southwest of Tulsa to Lima, O., has been completed and oil is moving from Oklahoma east. More than 200 miles of the 10-inch line have been filled with oil.

Rapid time was made on this job. Construction was started July 23 and the final weld was made Dec. 10. The line is 730 miles long. It terminates at Buckeye Junction, near Lima, where the Buckeye Pipe Line Co. will take the oil and move it to the Gulf's refinery at Toledo, formerly owned by the Paragon Refining Co., and to a refinery at Pittsburgh now being built.

A third refinery will be served. It is being built at Cincinnati. The Gulf will lay a line from Dublin, Ind., to this plant next spring. Alternate pump stations on the line have been completed and are running. The intermediate stations are to be completed by Feb. 1.

Another new pipeline in the Mid-Continent is being filled with oil. This is the Sinclair-Texas company's 12-inch line from Oklahoma City to Tyro, Kansas. It is 160 miles long and its present northern terminus is near the Sinclair Refining Co.'s plant at Coffeyville. About 112,000 barrels of oil are required to fill the line.

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### CORRECTION

An unfortunate typographical error was made in the issue of Dec. 10, in describing the rebuilding of the Swan-Finch refinery at Warren, Pa. On page 68 line 13, first column, the expression "25-30 poor bright stock of excellent quality" should have been "25-30 *pour* bright stock of excellent quality."

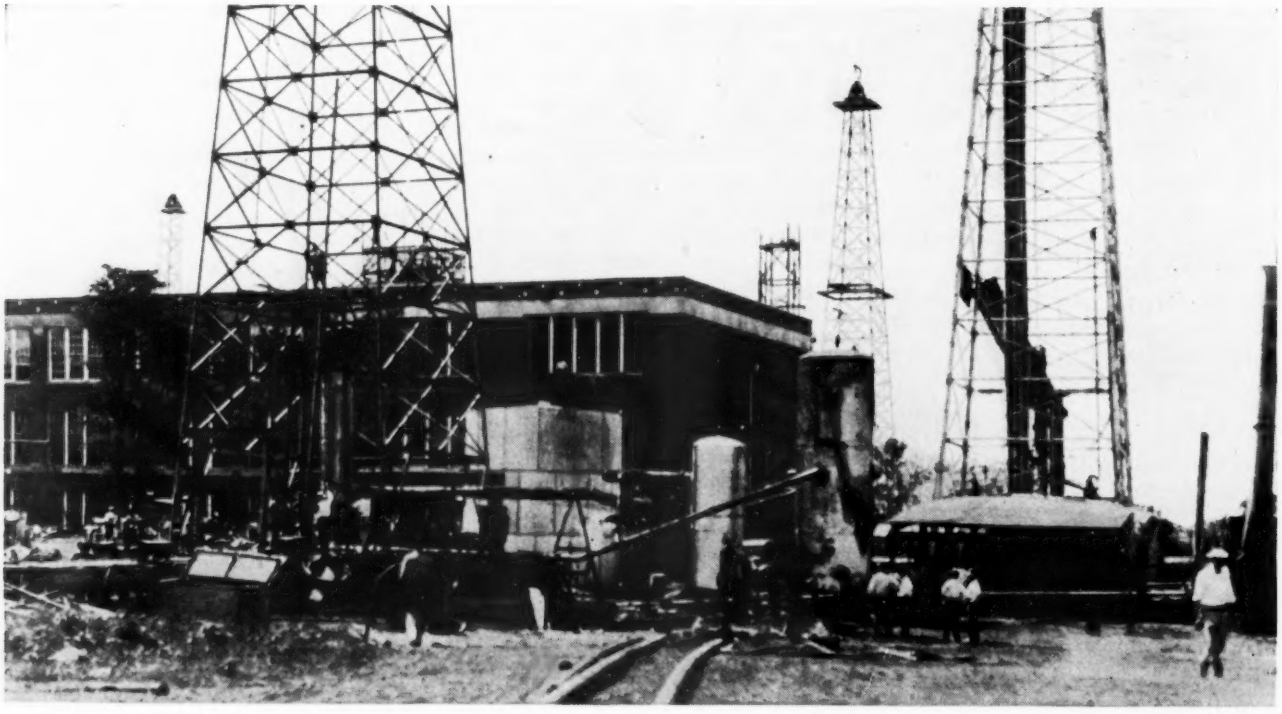

*Photo by Keystone View Co.*

**Classes at the Wheeler school at the eastern edge of Oklahoma City had to be abandoned when the well at the left of the picture came in. When drilling started on the well at the right parents and pupils demanded that it be stopped because of the danger to pupils. The state fire marshal ordered drilling stopped**

# Texas Proration Chairman Protests Hobbs Increase

HOUSTON, Dec. 12.

CHAIRMAN Robert R. Penn of the Central Proration Committee of Texas has made public copy of a letter written to President E. B. Reeser of the American Petroleum Institute regarding the Tidal Oil Co.'s request for an increase from 31,000 to 50,000 barrels daily in Hobbs field, New Mexico, prorated production.

Mr. Penn points out that "at the meeting of directors of the Mid-Continent Oil & Gas Association held in Dallas last week some discussion was had with you (Mr. Reeser) concerning the application of the Tidal Oil Co. . . . At that time you wired, at the request of the meeting, to A. J. Byles, president of the Tidal Oil Co., asking that the Tidal reconsider its action in demanding this increase.

"A wire later was received at the Dallas office of the American Petroleum Institute from Mr. Byles, in which he made the claim that the Hobbs field was not being given a fair proportion of the market outlet, considering potentials of wells and other factors.

"This letter is written to you by me as chairman of the Texas Central Proration Committee and embodies some figures which have been carefully checked with David Donoghue, technical advisor of our committee, showing that as a matter of fact Hobbs is receiving better treatment in outlet than any of the other big prorated fields in Texas and Oklahoma."

Mr. Penn points to the Hobbs pool as having allowable production of approximately 230 barrels per well; the Oklahoma City pool 195 barrels, although well costs are twice as high as at Hobbs; Yates pool, 210 barrels; Van pool, 164 barrels; Howard-Glasscock county pool, 43 barrels; Winkler field, 92 barrels; Sugarland and Raccoon Bend, in the Gulf Coast, described as very expensive operating territory, 118 barrels.

The average allowance in Texas, Mr. Penn points out, is now 19.2 barrels per day.

"Certainly," he says, "no operators of Texas or Oklahoma would consent willingly to any increase in the allowable production from the Hobbs pool at a time when the total allowables for both Texas and Oklahoma have been cut within the last few months from 15 per cent to 30 per cent; and when any increase in the Hobbs pool would be unquestionably at the expense of Oklahoma and Texas operators, particularly in the smaller producing areas."

# Propose Changes in Oil Shale Leasing Law

WASHINGTON, Dec. 15.—Representative Eaton of Colorado, has introduced a bill, H. R. 15002, proposing amendment of the national leasing act of February 25, 1920, in respect of claims of oil shale land filed under the placer mining law. The bill proposes a proviso to the act of 1920 to the effect that on or before August 25, 1931, the owners and claimants of all oil shale mining claims shall file with the register of the land office in the district in which each such claim exists, a statement of the claim and ownership. They are to give a description of the lands claimed, the names and addresses of each owner, the recordation data and an accurate statement of the amount of the work now existing upon and for the benefit of the claim.

After that has been done, in lieu of the existing requirements for $100 in annual labor on the claim, the owner or claimant shall pay to the Commissioner of the General Land Office $100 in money on or before June 30, 1932, and each year thereafter a like amount on each claim.

Failure to make such payment is to make the land subject to immediate notice by registered mail that the money has not been paid and that unless paid within 30 days, the title to the land shall revest in the United States.

As to all claims not so filed and upon which no claim for patent is filed, on or before August 25, 1932, they are to be conclusively presumed to have been abandoned and the titles to revest immediately in the United States.

# New San Joaquin Valley A.P.I. Chapter Meets

LOS ANGELES, Dec. 11.—With 130 interested engineers and field men present, the San Joaquin Valley chapter, Pacific Coast section A. P. I., got off to a good start, at a meeting held Dec. 4.

As part of the meeting Chairman R. R. Shinn, General Petroleum Corp. announced the selection of P. C. McConnell, as second vice chairman and appointed an advisory committee composed of the following men: W. R. Allen, Shell; M. S. App, General Petroleum; W. C. Cameron, S. C. G. Co.; D. B. Collins, Shell, L. E. Foust, Associated Oil, G. E. Holmes, Lakeview; G. I. Kenniston, Standard; R. L. Keyes, Texas; E. R. Pratt, Honolulu; W. J. Schultz, Crescent; J. B. Wells, Kern Sun; and J. J. Wilt, Standard.

A paper on Slow Motion Pumping of Small Wells was read by J. P. Crutchet, Chanslor-Canfield Midway Oil Co. In brief the paper said that in slow motion pumping, it is imperative that high volumetric efficiencies be secured, otherwise the expanded gas in the barrel will gas lock the pump and maximum production will not be obtained.

Two other papers, one by J. B. Stevens on Water Encroachment in the McKittrick field and one by R. E. Allen, assistant California umpire, also received considerable discussion from the oil men present. Jan. 20, 1931 was set as the date of the next meeting.

# California Operators Watch Developments In Belridge-Lost Hills District

By Jack N. Westsmith

N. P. N. STAFF WRITER

LOS ANGELES, Dec. 12

ACTIVITY and interest in several California areas was keen the past week as operators reported encouraging findings in important deep tests. Although one extension experiment of a proven field in the coastal region failed to develop expected showings, another obtained commercial production and appears to have opened a new play.

Anticipated production tests on critical wells in the North Belridge and Lost Hills fields had not been made at latest reports, although preparations were reported under way to drill out the cement over the week end in the Lost Hills deep sand discovery well.

Perhaps the item of greatest importance in the week's news was the successful completion of Wells Exploration Co.'s Meigs No. 2, one mile east and north of the old Pallisades Mesa field, northwest of Santa Barbara City.

Located in Sec. 28-4, 27, the project flowed at a rate of about 1600 barrels of 19.5 gravity oil on an initial production test. With the bottom at 2116 feet, tubing and casing pressures of 510 and 800 pounds, respectively, the completion was thought to be good for at least 2000 barrels daily if opened up.

Because of limited storage capacity the well was shut in and when opened up made a rated output of 1100 barrels of 21 gravity oil cutting 4 per cent sand. This flow was accompanied by approximately 2.5 million cubic feet of wet gas.

A satisfactory water shut-off was obtained with 8¼-inch cemented at 2004 feet. The well's log indicated the productive Vaquerous sand had been penetrated at 2036 feet. An encouraging feature about the new find, in contrast to the nearby Mesa field, was the apparent absence of sulfur in the crude.

The old Santa Barbara Mesa field was discovered in May of 1929 (see NATIONAL PETROLEUM NEWS, May 29, 1929) by Olympic Oil and Refining Co. An extensive drilling campaign that followed failed to yield a single other commercially productive well and operators were estimated to have lost upward of ten million dollars.

When a recompletion test on the discovery well, which had been shut in for lack of storage, also failed to yield oil a majority of the operators abandoned the area. Extension wells in the area were unsuccessful in their search for the pay until several months ago when Valemont Oil Co. opened an oil sand in the hills north of the abandoned field.

Two other wells in the same vicinity as the new completion are pumpers, due, it is thought, to a greater penetration of the Meigs and perhaps because it lies next to a fault in an accumulation. Not one of the three projects experienced the water troubles that were so prevalent in the old Mesa field.

Reports were not so encouraging at Bolsa Chica Oil Corp.'s test in the tideland's off Coal Oil Point, northwest of Elwood. Cores indicated the well had not penetrated the Vaquerous at 3800 as expected. Drilling was being continued below 4350 feet in soapstone and shale, as the week closed, with the sand showing good ether cuts.

INTEREST in the Lower San Joaquin Valley area was centered about four wells—three in the Lost Hills-Belridge play and one on the heretofore unexploited Tejon ranch, south and east of Bakersfield approximately 25 miles.

At least one production test is expected in the Lost Hills field within the week. Universal Consolidated Oil Co.'s deep project, No. 49 is standing with 9-inch casing set at 4860 feet, approximately 24 feet off bottom. An oil sand, reacting to various tests as a good oil sand should, and an accompanying heavy gas pressure, cause experts to predict great things for the newest test of the Temblor.

The crew was reported drilling out the cement plug in Richfield Oil Co.'s flank well of the North Belridge field after a water shut-off job on top of the Temblor at 5580 feet. Actual testing of the uncovered oil sand is expected to be delayed while a second cement job at about 5775 feet excludes possible water and gas sands that might not be favorable on the flow test.

ON THE extreme northwest end of the Lost Hills structure, as outlined by shallow producers, Getty Oil Co. is preparing to resume drilling on a well that had to be suspended when it appeared the drill had penetrated the Pacific Ocean. Flow of salt water was so great at about 2000 feet that engineers expected to need special equipment to proceed.

However, heavy equipment has been installed to circumvent this trouble. Correlations of cores indicate the Getty well is considerably higher on the structure than Universal No. 49, in the southern end of the Lost Hills field. These cores also agree favorably with those obtained from producers on the North dome, Kettleman Hills.

Successful completion of the three tests in this area alone,

would make it necessary to revise all estimates of total probable production from California fields. If, as it appears likely, the oil is of that high gravity quality obtained at Kettleman, an extensive drilling campaign would menace the entire proration set-up. Fortunately a majority of the acreage in this area is controlled in large tracts by major oil companies favoring curtailment.

On the Tejon ranch, near the foothills, southeast of the Belridge-Lost Hills play, a wildcat well is being drilled ahead preparatory to setting a liner against sand troubles that emphatically ended a recent production test, during which oil was reported to have been forced over the crown-block by a heavy gas pressure.

With all this activity in the San Joaquin Valley, anything less than a gusher in any other area is hardly worthy of note. However, Superior Oil Co. has set what officials claim is a protection string against loss of circulation in its deep test of the Huntington Beach field. Scouts believe something has been found and that the pipe run was a combination string for a test of the reported showings.

## Los Angeles to Tax Oil Production

LOS ANGELES, Dec. 12.—As a further burden to oil companies, the Los Angeles City Council, Dec. 11 adopted an ordinance that fixes a tax of half a cent per barrel on all oil produced within the city limits. The ordinance will become effective 30 days after it is signed by the mayor.

It is understood the revenue derived from this source will be used to maintain police and fire protection and streets, highways, and public improvements in and around oil districts. Estimates place the probable annual income from oil tax in excess of $80,000.

At the present curtailed rate of production, Playa del Rey would pay tax on about 42,000 barrels; Torrance on 1250, Rosecrans on 1430, and Los Angeles-Salt Lake on 1560 barrels.

# On the Western Front

By Jack N. Westsmith
Los Angeles

**ARTHUR BEEBY THOMPSON**, eminent English geologist and engineer recently spent several weeks on the Pacific Coast renewing acquaintances and checking up on operating methods in California fields.

During his visit he spent considerable time with F. W. Lake, general production superintendent of Union Oil Co.'s southern division and with E. P. Tallant, engineer of standards for the same company. Mr. Thompson is associated with the Burma-British Petroleum Co.

Gossip will have it that English interests are still in the market for Union. It will be remembered that just prior to the World War an English company obtained an option on the California company, but did not follow it up because of the complications offered by the international conflict.

* * *

**J. M. Rust, assistant treasurer**, Union Oil Co. was recently elected to the Board of Directors of the National Association of Credit Men.

* * *

**F. W. Lake, production superintendent** of Union Oil Co.'s southern division during the past year, was recently promoted to the position of general manager of the division.

In the eight years Mr. Lake has been with Union he has been responsible for numerous refinements in the company's development and production practices.

* * *

**Removal of the Pacific Coast** office of the American Petroleum Institute from San Francisco to Los Angeles was recently the occasion for a dinner meeting. A. H. Bell, chairman of the Pacific Coast district activities of the institute, called the meeting to welcome Norval White, west coast representative.

Mr. Bell also made it a get-together meeting for all the central committee members resident in California, the district officers and all topical committees.

Reports by committee chairmen and discussions were held on standardization of drilling practice, standardization of records and nomenclature, development and production research, prime movers, and metallurgy of oil field equipment.

**Left to right—F. W. Lake, Union Oil Co., Arthur Beeby Thompson, premiere English geologist, and E. P. Tallant, Union Oil Co.**

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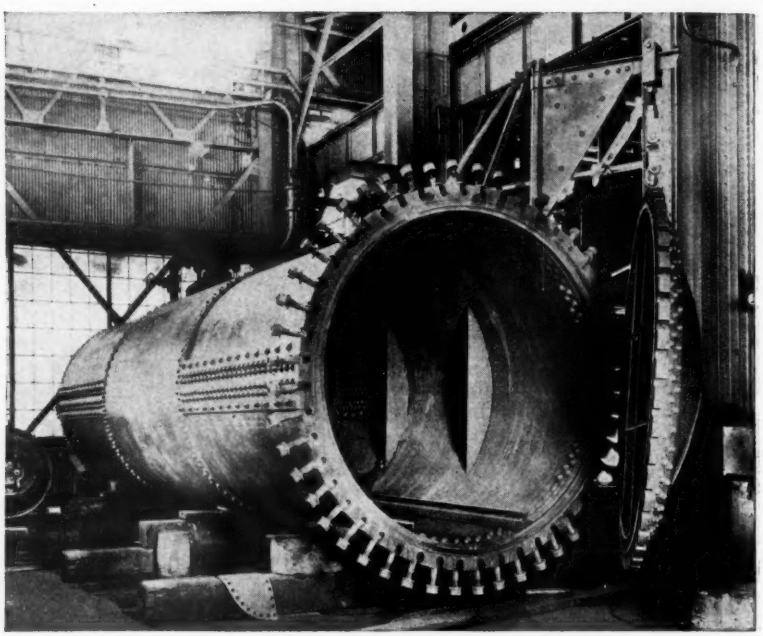

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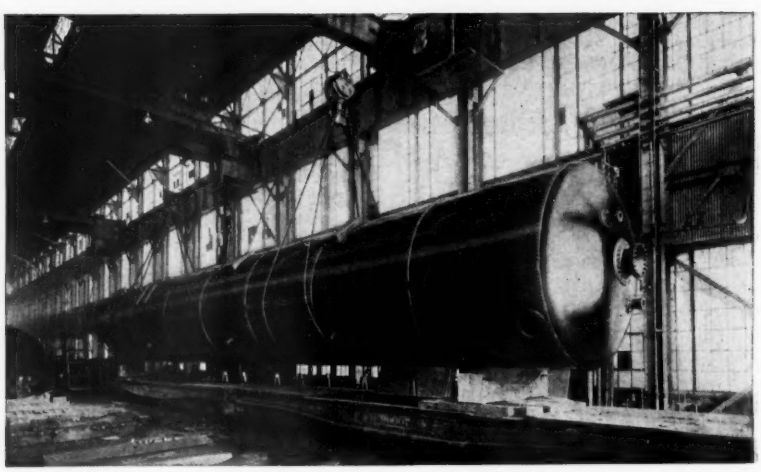

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# Texas Districts Continue Production Cuts Clarifying Problems

By Paul Wagner

N. P. N. STAFF WRITER

FORT WORTH, Dec. 12 COORDINATION of transportation facilities for equitable distribution of pipeline runs, plus further reductions in district production allowables under state prorating orders, are clarifying field problems of the general Ranger, Wichita Falls and Panhandle areas of Texas.

Together the three general areas will be permitted to produce approximately 115,000 barrels of prorated oil daily compared with potentialities exceeding 250,000 barrels and recent allowables totalling 201,000 barrels. Except for the Panhandle, where there are some large flush wells, production comes mainly from thousands of relatively small wells.

The three general areas mentioned, because of these thousands of small wells, have been the Texas producing industry's greatest problem in getting within the 680,238 barrels total of the state's present daily prorating maximum.

The Wichita Falls district, prorated on a basis of approximately 52,000 barrels daily market outlet, is now reported equitably served throughout by virtue of "exchanges" of crude and pipeline connections.

Conditions are working out similarly in the general Ranger territory, except that details have not been completed of absorbing some of the oil on properties previously served by the Prairie Companies.

The latest development in the situation was the result obtained at a Fort Worth meeting, Dec. 11, of Panhandle operators and crude oil purchasers. A cut in allowable production from 64,616 barrels to 40,000 barrels daily was agreed on; steps being taken also to provide unconnected properties and wells with their share of the market outlet.

Due to the Prairie's recent withdrawal as a purchaser, plus the remote position of some wells previously, there had been approximately 215 Panhandle properties and 408 wells without market outlets for crude.

Whether all Panhandle wells and properties will be served under the present program remains open to question, but the machinery for working out the situation and giving relief to the smaller well operators is now in motion. It was decided that the smaller well operators who had not been previously served or those with properties on, or adjacent to Prairie lines should be taken care of first. Integrated companies who do not have Panhandle district facilities of their own would be served after the smaller operators have been provided with connections.

It was understood that where properties or wells are remote from pipeline facilities, or where any appreciable construction expense is involved, the operators themselves will pay the cost of making connections.

THREE companies now handle virtually all the "outside" oil purchased in the Panhandle, namely, The Texas Co., Humble Oil & Refining Co., and Toronto Pipe Line Co., Ltd., the last mentioned engaged in tank car shipments mainly to the northern United States and Canada. Together, these companies will account for approximately 23,500 barrels of the 40,000 barrels present allowable production.

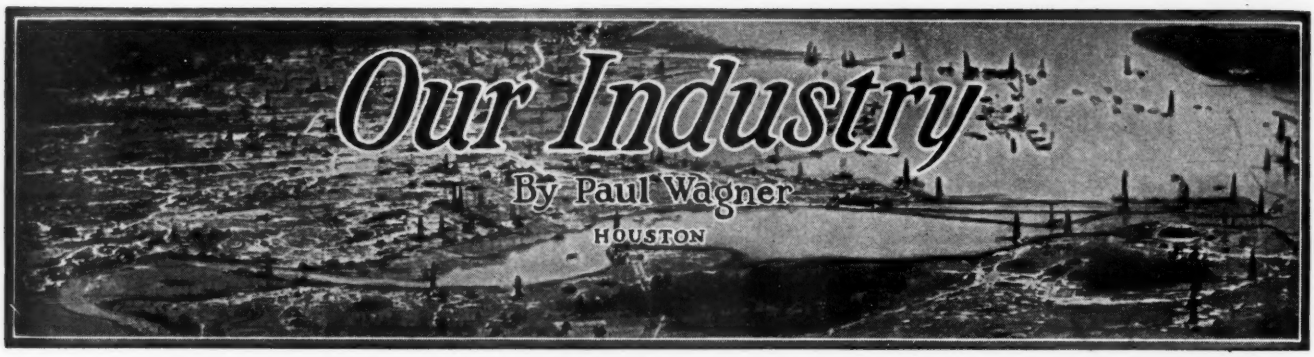
Other transporters are handling oil almost exclusively from their own or joint account properties. It is explained that while nominations of crude runs from such companies in some cases reflect greater demand for oil than their pro rata would be under proration maximums, these transporters have been unwilling to handle "outside" oil, so that nominations in excess of the scaled-down allowable directed to them fail to represent market outlets for others.

IT WAS learned at the Fort Worth meeting that under-the-market quantities of Panhandle crude recently moved into the Wichita Falls refinery district through common carrier pipeline shipments have been eliminated, and small amounts of oil moved from the Taconia area of Gray county, in tank cars, promise to disappear as a Wichita Falls district problem also.

Independent operators are described as willing to abide by reduced allowables, if all their leases are connected and crude withdrawals are equitably made.

The Panhandle advisory committee also will ask the railroad commission that its district be prorated on a percentage of potential production basis strictly and that the marginal well allowance of 12 barrels per well daily be dropped from regulations now applying.

Postponement of a railroad commission hearing until Jan. 10, at Austin, probably has disposed of a proposed increase in Van field, East Texas, outlet until after that date. Van allowable production continues at 27,500 barrels daily in the meantime. Sliding scale increases had been asked over 15-day periods that would have brought the outlet to 50,000 barrels daily in February.




**TURKEY may soon take its** place among the oil producing countries of Europe, in the opinion of Djevad Eyoub, San Antonio petroleum geologist, who has just completed a year's survey of the Ottoman region. He was "loaned" by the Henry L. Doherty & Co. interests to the Turkish government for the survey. Mr. Eyoub is a native of Turkey but has practiced his profession in Mexico and Texas for about 10 years.

Mr. Eyoub reports oil and gas seepages near the ancient tomb of Apollon, among other places in Turkey. Some yield paraffin base crude testing as high as 36 degrees gravity, he says.

Although Turkish laws are now unfavorable to exploration, Mr. Eyoub is authority for the statement that government officials are anxious to see test work begun and have expressed willingness to co-operate in making this possible. He says, however, the Turkish policy will be to permit the production of only such quantities of petroleum as will be required to meet that country's own requirements.

The population of Turkey is estimated at 14,000,000 souls. Motor cars in use are said to total between 6000 and 7000.

* * *

**J. R. Boswell, associate of** Louis A. Green in the Radio Petroleum Co., Fort Worth, has been connected with this marketing organization since its inception about 10 years ago. He is now secretary-treasurer of the company, which is a close corporation headed by Mr. Greene.

* * *

**Floyd Bryant of the Standard** Oil Co. of California, Los Angeles, succeeded Emerson Butterworth, resigned, as a member of the "wildcat committee" of the California Oil & Gas Association. The "wildcat committee" has charge of the association's social activities.

* * *

**Friends of Henry Brown, vice** president of the United Gas Co., and formerly treasurer of the Continental Supply Co., will learn with regret of his prolonged indisposition following an airplane accident in Pennsylvania about two months ago. Mr. Brown is now at his home in Webster Groves, a suburb of St. Louis, but remains under attention of a nurse.

* * *

**P. F. LeFevre, general man**ager of The Texas Co. (China) Ltd., South China division, has returned to the Orient after a business trip to the United States.

J. R. Boswell

**Ford Turner of the Pure Oil** Co.'s West Texas scouting department saw some of the International polo games at Mexico City on his recent vacation. He is now back on the job at San Angelo.

* * *

**E. A. McKenna, formerly** chief geologist at Tampico of the International Petroleum Co. subsidiary of Mexican Seaboard Oil Co. of Maine, is now living in Pasadena, California. With "Jimmy" Kelley, formerly Tampico drilling contractor, he is conducting operations in the Los Angeles Basin territory. Mr. McKenna recently moved to Pasadena from Berkeley.

* * *

**George Haddock, formerly** well known in the Tampico district oil fields of Mexico, is now drilling in the Mount Pleasant territory, Midland county, Michigan.

* * *

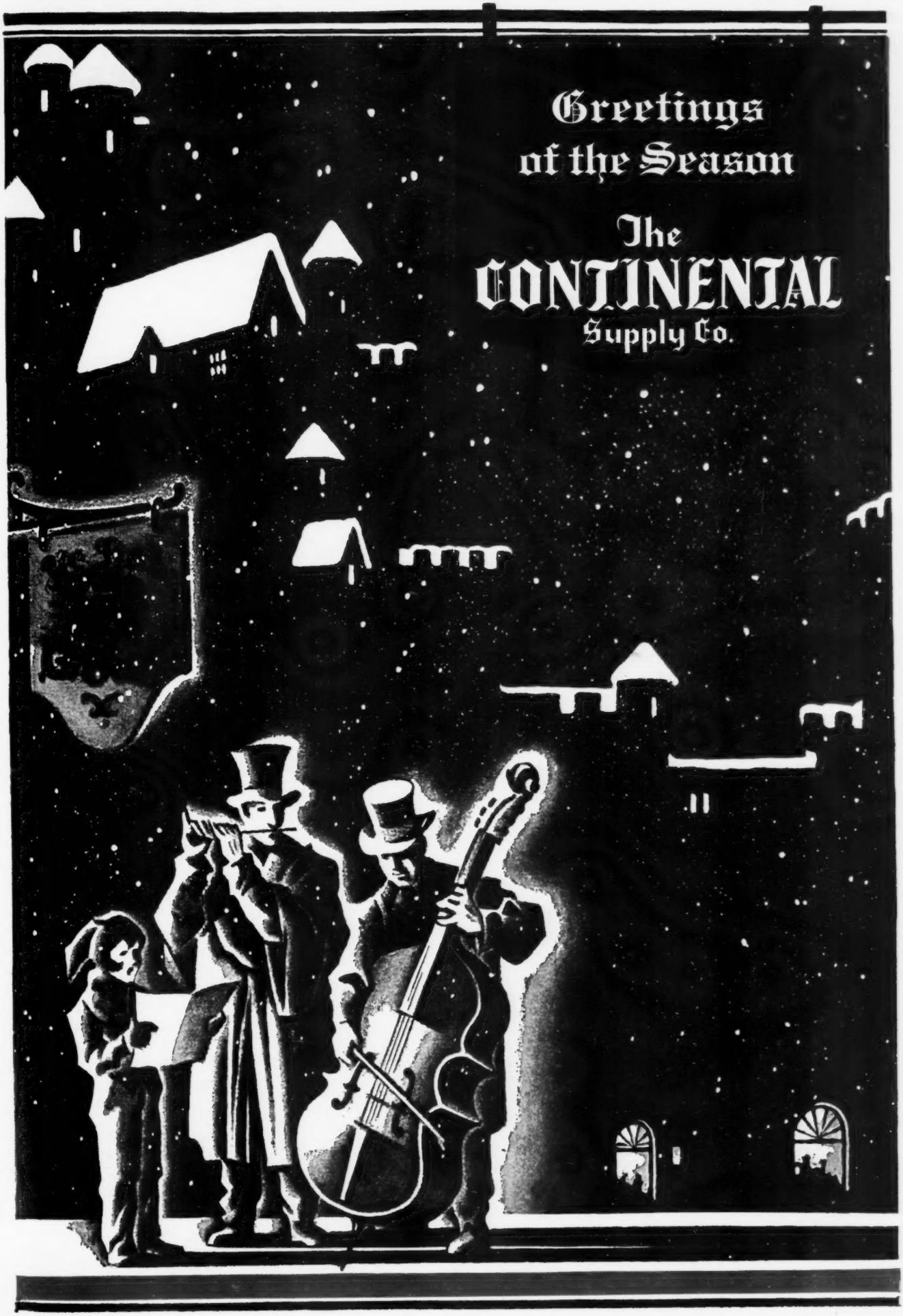
**W. B. Logan, formerly assist**ant to the first assistant superintendent of The Texas Co.'s Port Arthur works, has been transferred to the New York offices.

* * *

**F. W. Lake, formerly produc**tion superintendent of the southern division, Union Oil Co. of California, has been promoted to general superintendent of the division. Mr. Lake, who has been with the Union since 1922, will be responsible for all drilling and production operations in Los Angeles basin territory.

* * *

**Transferred from Magnolia** Gas Co., at Dallas, and now to be found in the Houston accounting department of United Gas System, are S. D. Redfield, C. F. Clevenger, W. C. Smith, Lloyd E. Hampton and Emma Meyerhoff.


Greetings
of the Season
The
CONTINENTAL
Supply Co.

# Ultimate Production of Old Leases Increased by Using Vacuum

By William F. Lowe

N. P. N. STAFF WRITER

TULSA

THE application of vacuum to oil wells depends for its success on a number of factors. Of these, the texture of the producing sand and the physical characteristics of the oil are the most important. As far as the actual operation is concerned, the time of application of vacuum, and its continuous use, determine whether it will lead to a greater return than other methods of production.

These are a few of the interesting conclusions reached by B. E. Lindsly* and W. B. Berwald* in their joint research on the use of vacuum in the production of oil. The complete report of their work and findings appeared recently as Bulletin 322 of the U. S. Bureau of Mines, "Effect of Vacuum on Oil Wells." It deals with all the operating phases, both theoretical and practical. Concrete examples from a large number of fields are cited and the results of many comprehensive tests given in detail.

*Ben E. Lindsly, Senior Petroleum Engineer, U. S. Bureau of Mines. W. B. Berwald, Associate Petroleum Engineer, U. S. Bureau of Mines.

**Conversion table of vacuum in inches of mercury to pounds per square inch absolute, at approximate normal barometric pressures. Computed on the basis that a column of mercury 1-inch high, at 60 degrees Fahr., exerts a pressure of approximately 0.4884 pound per square inch.**

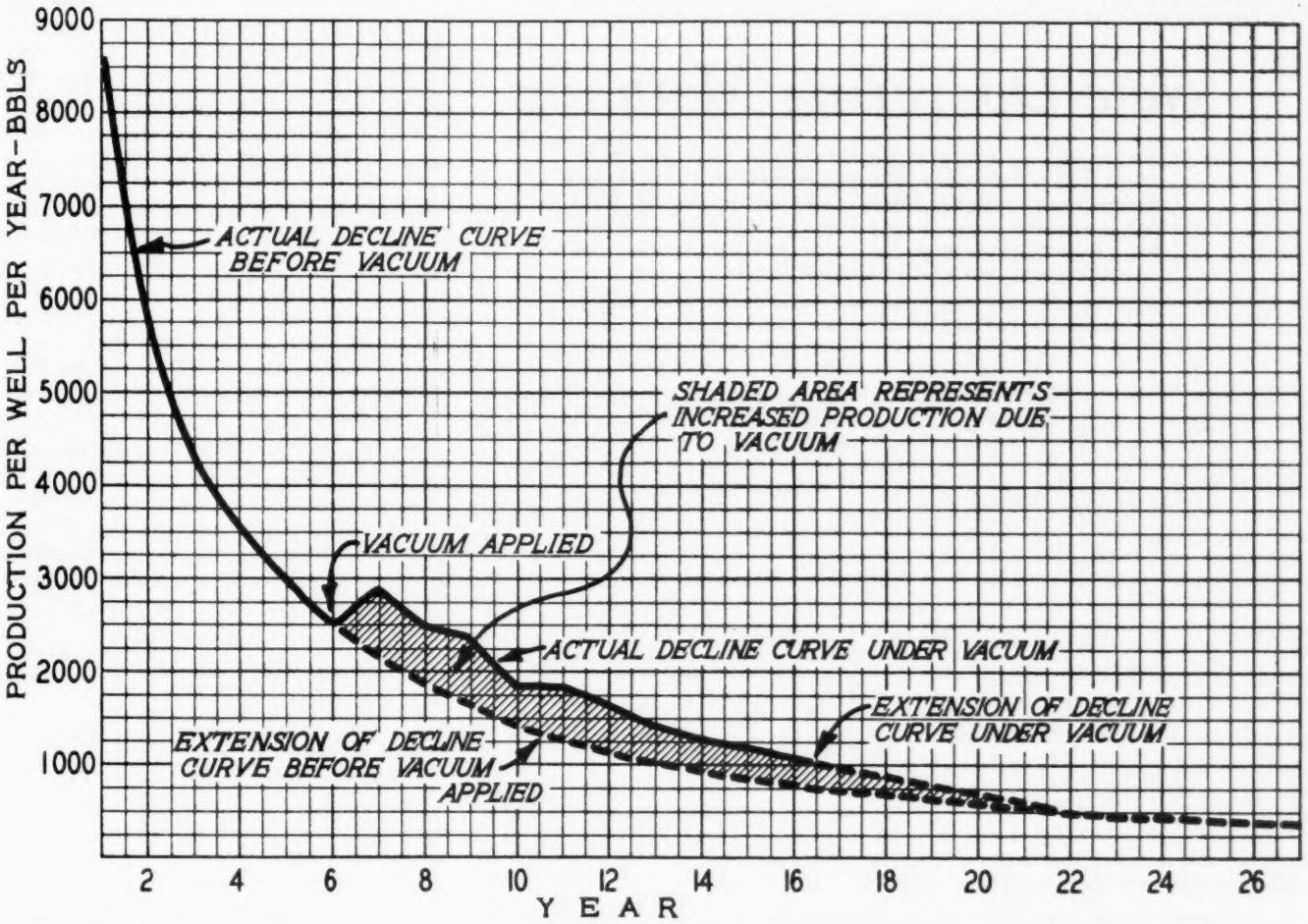
| Mercury vacuum, inches | Pounds per Square inch absolute | | |
|---|---|---|---|
| | Sea level, 30 inches | Mid-Continent, 29.48 inches | Salt Creek, Wyo., 25.18 inches |
| 0 | 14.65 | 14.40 | 12.30 |
| 1 | 14.16 | 13.91 | 11.81 |
| 2 | 13.68 | 13.42 | 11.32 |
| 3 | 13.19 | 12.93 | 10.83 |
| 4 | 12.70 | 12.45 | 10.35 |
| 5 | 12.21 | 11.96 | 9.86 |
| 6 | 11.72 | 11.47 | 9.37 |
| 7 | 11.23 | 10.98 | 8.88 |
| 8 | 10.74 | 10.49 | 8.39 |
| 9 | 10.26 | 10.00 | 7.90 |
| 10 | 9.77 | 9.52 | 7.42 |
| 11 | 9.28 | 9.03 | 6.93 |
| 12 | 8.79 | 8.54 | 6.44 |
| 13 | 8.30 | 8.05 | 5.95 |
| 14 | 7.81 | 7.56 | 5.46 |
| 15 | 7.33 | 7.07 | 4.97 |
| 16 | 6.84 | 6.59 | 4.49 |
| 17 | 6.35 | 6.10 | 4.00 |
| 18 | 5.86 | 5.61 | 3.51 |
| 19 | 5.37 | 5.12 | 3.02 |
| 20 | 4.88 | 4.63 | 2.53 |
| 21 | 4.40 | 4.14 | 2.04 |
| 22 | 3.91 | 3.66 | 1.56 |
| 23 | 3.42 | 3.17 | 1.07 |
| 24 | 2.93 | 2.68 | .58 |
| 25 | 2.44 | 2.19 | .09 |
| 26 | 1.95 | 1.70 | .00 |
| 27 | 1.47 | 1.21 | ..... |
| 28 | .98 | .72 | ..... |
| 29 | .49 | .24 | ..... |
| 30 | .00 | ..... | ..... |

The action of vacuum in promoting the flow of oil in a well has two major effects. It increases the pressure differential between points within the sand body and the well, and liberates the propulsion gases from the oil. In the latter case, the liberated vapors have a sweeping or propulsive effect on the oil remaining in the sand. The action tends to open pore spaces in the upper portions of the saturated zone, and under favorable conditions, continually and progressively exposes new surfaces to evaporative action. The principal factors affecting this movement are: texture and porosity of the oil sand; character of the sand body; and the physical characteristics of the oil.

Of these factors, the texture and porosity of the oil sand has a more important bearing upon increased oil production by the use of vacuum than the other two. This conclusion is based on the findings of C. S. Slichter* in his studies of the flow of water and air through sands. He proved that the flow of either varied directly with the square of the diameter of the mean grain size and inversely with a function of the porosity. Considering the fact that water and air differ so widely in their physical characteristics, it seems likely that the same laws would govern the flow of oil.

The general character of the sand body may nullify the good effects of favorable porosity. This is particularly true if it is interspersed with beds of bentonite, shale, or floating sand, for any of these materials is capable of mudding up the sand so completely as to

*Charles S. Slichter—Theoretical Investigations of the Motion of Ground Waters U. S. G. S. Nineteenth Ann. Report.




**Production decline curve of Glenn pool, Okla., showing the effect of vacuum. Note production increased the year that vacuum was applied and after that the decline was more rapid than the projection of the normal curve. It is estimated the increase in the ultimate return for this group of wells was a little over nine per cent**

prevent the escape of either oil or gas. Under these conditions, unless carefully regulated, the use of vacuum increases the tendency of a well to "sand up." The resulting clean out jobs are expensive. A lenticular sand body does not offer any insurmountable obstacles to the use of vacuum unless the lenses happen to be of unusually small size. In the event that the latter condition did exist, it is thought that even water flooding would be ineffective.

Vacuum has a greater effect on the flow of light oil through sands than on a heavy oil. Part of this is due to the usually lower viscosity of the former, though the fact that it also contains a larger amount of gas in solution gives it additional propulsive force. It does not necessarily follow, however, that the increase in oil production is in proportion to the amount of gas produced. The application of vacuum may often enormously increase the gas volume while the oil production may show but little fluctuation.

The general effect of such a condition is a disproportionate gas-oil ratio. In this connection, however, it is interesting to note that the tests conducted on a large number of wells indicate that vacuum does not always result in increasing the gas-oil ratio. On properties where other methods of production have reached their economic limit, such an increase may even be advisable. In general, however, any vacuum operation that unduly increases the gas-oil ratio is likely to be unprofitable as well as resulting in the waste of natural resources.

For the above reasons, it is thought the application of vacuum should be deferred until the rock pressure of the sand has been largely depleted. This implies a corresponding reduction in the amount of propulsive energy in the form of gas pressure remaining in the pay horizon. Under these conditions, given suitable characteristics for both the oil and sand, an increase in the ultimate recovery may be expected. If applied prematurely, the increase in the volume of gas produced will cut the ultimate yield of oil materially.

Discontinuing the use of vacuum on properties after a considerable period is likely to be accompanied by serious losses in production. Often, the wells can never be brought to their former producing level without a return to vacuum, or by repressuring. No other methods can be satisfactory. This is due to the fact the propulsive forces within the sands have been depleted.

In comparing the vacuum production method with repressuring, as a means of increasing the ultimate yield, the latter has a decided advantage. It has a greater latitude of pressure range as it builds successfully from a few pounds to several hundred. The range for vacuum is absolutely limited to

# New Operating Methods

***An average of two articles per issue of National Petroleum News, have discussed new operating methods and solutions to problems facing operators in the oil fields.***

***What operators are doing to cut costs, new methods and ingenious devices for more efficient work, and other features, are told in these articles.***

***Here are 73 that have appeared since the first of year in National Petroleum News for your file reference:***

**1930**

Oil and gas separators, their successful operation Dec. 3, p. 47
Progress in production practice due to better gas utilization Nov. 19, p. 39
Operating water flooded properties under Bradford proration Nov. 12, p. 176
How rotary drill mud is reclaimed in Ventura Avenue Nov. 12, p. 185
Requirements of drilling 15,000-foot wells Nov. 12, p. 171
Development in handling tubing under pressure Nov. 12, p. 161
Well shooting needs knowledge of mechanics of explosives Oct. 29, p. 41
Bottom hole beans beneficial for low gas production Oct. 22, p. 31
Automatic control of wet gas wells Oct. 15, p. 57
Gas lift practice in California Oct. 15, p. 46
Producers run tubing to cut output Oct. 8, p. 53
Electrical pumping unit compact without loss in efficiency Oct. 1, p. 48
Drilling mud contamination causes cement failure Sept. 17, p. 54
Gas-driven pump jacks successful in California Sept. 10, p. 45
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Tubing Yates wells increases gas efficiency Sept. 3, p. 44
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Rolling rig method for coating pipe Jan. 1, p. 58

***Back copies of any of the above issues are 25c a copy. On issues that are exhausted, photostats will be furnished at 40c per page. Libraries in the larger cities generally keep back files of National Petroleum News complete.***

## National Petroleum News

***Main Office: 1213 West Third St.*** ***Cleveland, Ohio***


14.7 pounds per square inch of negative pressure at sea level, and less at higher altitudes. The accompanying table illustrates this point.

The results of the large number of tests, both field and laboratory, which were conducted previous to the compilation of the information contained in this report, furnish answers to a number of questions. In almost every case the gravity of the oil being produced was lowered, the quantity of the gas and natural gasoline raised, and the ultimate recovery increased. It was proven that the depth of a well has very little effect on the degree of vacuum that may be imposed on the sand, as compared to the vacuum at the casing head.

### Map of North Central Montana

WASHINGTON—As a by-product of geologic investigations incident to administration of the general leasing law of 1920, a preliminary structure-contour map of the Bears Den, Flat Coulee, and Whitlash districts, in north-central Montana, has just been issued by the Geological Survey. The area mapped comprises about 180 square miles in Toole and Liberty counties contiguous to the Canadian boundary and includes the north, east, and southeast flanks of East Butte, in the Sweetgrass Hills.

The map is based on field investigations by C. E. Erdmann, geologist, in November, 1929, supplemental to reconnaissance investigations by A. J. Collier in 1923, and includes a revision of well status to July, 1930.

A few copies of this map are available at the offices of the Geological Survey in Washington, D. C., at Billings, Mont., and at Shelby, Mont.

### A. P. I. to Publish Quarterly Bulletin

NEW YORK, Dec. 12.—Weekly bulletins of the American Petroleum Institute will be devoted exclusively to statistical reports gathered by the institute in the future. In addition the institute will publish a quarterly bulletin devoted to reviews of the organization's general and committee activities. The first quarterly bulletin will be printed in March or April.

# Refining Cracked Distillates

## Part 1

By Jacque C. Morrell*

DURING the year 1929 the United States produced over one billion barrels of crude oil and an additional one-half billion barrels was produced by the remainder of the world. The total gasoline production during the same period was approximately 375,000,000 barrels of which approximately 39 per cent was cracked gasoline. The problems of refining which in a great measure flow from the demand to meet definite specifications are thus of the first order of economic magnitude.

The present paper covers the refining of petroleum distillates generally but is aimed specifically at the refining of cracked distillates, especially since owing to the more complex composition of cracked distillates refining methods which apply to them are equally applicable to straight run distillates.

Petroleum distillates are refined by chemical and physico-chemical methods. The principal chemical treatment is with sulfuric acid and the various reagents used for neutralization and sweetening. An example of physico-chemical treatment is the use of adsorbents which include the various earths, outstanding examples of which are fullers earth, Death Valley clay, betonite, bauxite and similar earths both treated and untreated. Combination treatments are also used.

Refining by the use of solvents such as liquid sulfur dioxide is important in the treatment of some burning distillates. For a resume of numerous refining agents and methods which have been proposed or used in the past the reader is referred to an article published several years ago[1].

### Sulfuric Acid Treatment

Cracked distillates contain four major groups of hydrocarbons, namely, the unsaturated, aromatic, naphthene and paraffin hydrocarbons. Ninety-five per cent sulfuric acid reacts strongly with unsaturated hydrocarbons. Aromatic hydrocarbons dissolve to a considerable extent in sulfuric acid of concentrations of 80 per cent and upward. The solubility of the aromatic hydrocarbons increases with increase in the molecular weight of the homologues. The lower members of the napthenthene series react with concentrated sulfuric acid. The paraffin hydrocarbons, with the exception of methane, react with sulfuric acid containing high percentages of sulfuric tri-oxide and the solubility increases with the per cent of sulfur tri-oxide and increased temperature.

### Olefins or Unsaturated Hydrocarbons

It is very generally known that sulfuric acid reacts with olefins to give four types of products, namely, alcohols, esters, polymers and oxidation products. (There have been some statements in the literature that olefins may also be reduced by a sulfuric acid treatment.) The extent to which each of these reactions occurs is a function of the molecular weight and the structure of the olefin as well as the concentration of the acid.

Polymerization increases with increase in the concentration of acid to a maximum of 91 per cent acid. Tertiary alcohols are formed directly by treatment with sulfuric acid and originate from tertiary olefins which have been shown to be the most reactive. There is some proof that aromatic hydrocarbons condense with olefins and some have stated that the aromatics may also condense with the paraffin hydrocarbons when cracked distillates are treated with sulfuric acid. The evidence on this latter point is not complete.

One of the most important reactions in the treatment of cracked distillates is the polymerization of unsaturated hydrocarbons. The practical aspect of polymerization resides in the fact that hydrocarbons within the boiling range of cracked gasoline will be converted into and will remain with the higher boiling fractions. This is a particularly important problem when one attempts to refine a cracked gasoline with sulfuric acid without subse-

[1]Various Methods of Refining with a special Reference to Cracked Hydrocarbon Oils. J. C. Morrell & Gustav Egloff, (Refiner & Natural Gasoline Manufacturer, Vol. II, No. 9, Sept., 1923.)

See also Bibliography of Organic Sulphur Compounds, 1871-1929, Borgstrom, Bost & Brown, A.P.I. 1930.

*Research Laboratories, Universal Oil Products Co.

THIS is the first of a series of articles by Dr. J. C. Morrell covering the entire subject of treating petroleum distillates.

Dr. Morrell has specialized in the cracking field, particularly in treatment of cracked products, for the past 10 years. He has worked out successful treating methods for distillates from practically every crude which has offered severe problems to refiners.

This has included designing of many successfully working treating plants for converting many types of refractory distillates into marketable gasoline.

For this reason, the accompanying article should be of particular interest and value to chemists and refinery operating men generally. The second article will appear in an early issue.—Editor.

# Hydraulic valve lubrication insures effective manipulation

High pressure lubrication prevents valve leakage by application of the Nordstrom principle. Nordstrom Valves prevent leaks and stay tight after long service. A force several times that of the line pressure is used to force viscous "Merco" lubricant into every pathway of leakage, thereby sealing the valve effectively from further leakage. The seat and plug surfaces are renewed completely by making use of the proper lubricants. At the same time pressure lubrication performs the other functions of a hydraulic jack when necessary to loosen the plug when stuck and so reduces the coefficient of friction on sliding metal surfaces held together under high pressure. Furthermore, Nordstrom Valves effectively combat corrosion and erosion when used as a stop in the pipe line. None of the vital parts are exposed to disintegrating forces of the fluid. We strongly recommend the use of "Merco" lubricants. Ask for Catalog.

## THE PERFECT APPLICATION OF A PRINCIPLE

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# Nordstrom Valves

quent redistillation. In connection with the subject of polymerization of cracked distillates the reader is referred to a previous article by the writer[2].

It is believed that the sulfuric acid esters remaining in the cracked distillate after acid treatment are responsible in a large measure for the instability of acid treated cracked distillates which are not redistilled owing to hydrolysis and development of acid with consequent discoloration of the distillate. Oxidation of elementary sulfur may also cause the same effect. During distillation the alkyl esters are decomposed into sulfur dioxide and tars, the latter remaining with the undecomposed esters in the still bottoms. The sulfur dioxide is later removed by washing the distillate with dilute alkalies and water.

### Desulfurization of Cracked Distillates

Borgstrom and Reid[3] have compiled a list from the literature (shown below) of the sulfur compounds that have been identified in petroleum, shale oils and tar oils:

**Petroleum**

$H_2S$
Sulfur
$H_2SO_4$
Alkyl sulfates
Sulfonic acids
$CS_2$
Mercaptans
Alkyl mercaptans
Sulfides
Alkyl Sulfides
Cyclic Sulfides
Thiophene
Aryl mercaptans

**Shale Oils and Tar Oils**

Thiophene
Methyle Thiophenes
Ethyl Thiophenes
Butyl Thiophene
Thionaphthene
Thionaphthene 2-methyl
Diphenylene Sulfide
Penthiophine

From the evidence to date compounds such as hydrogen sulfide, elementary sulfur, mercaptans, disulfides and sulfides may be removed readily with sulfuric acid while compounds presumably of the thiophene type are much more difficult to remove under the conditions of refining.

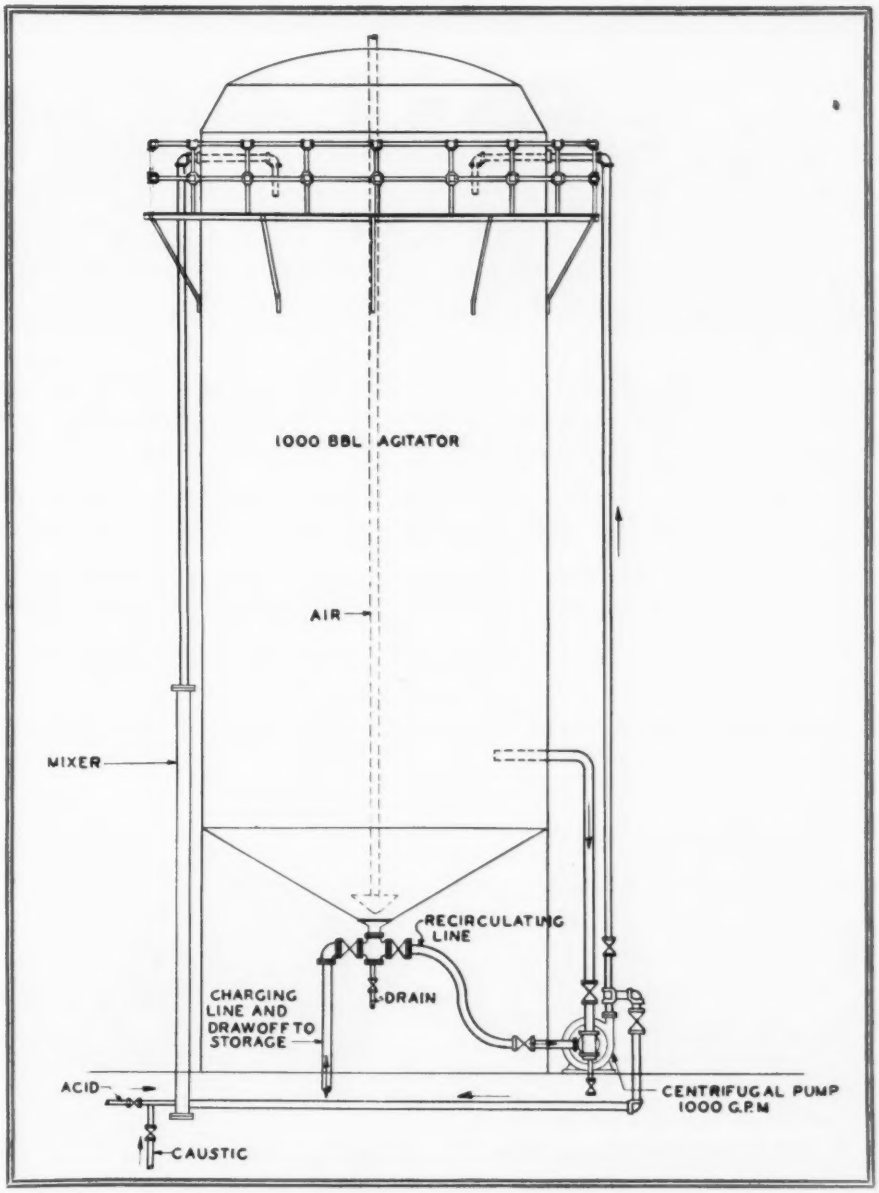


**Fig. 1—Recirculating system for treating distillates**

In the removal of sulfur compounds by sulfuric acid the principal reactions are oxidation and solution, for example, hydrogen sulfide may be oxidized in successive stages to sulfur and sulfur dioxide. Mercaptans are oxidized to the disulfides and perhaps higher oxidation products. Alkyl sulfides and the di-alkyl sulfides are quite soluble in sulfuric acid. Oxidation products of the sulfides such as sulfoxides and sulfones also dissolve in sulfuric acid. Thiophene and its derivatives when removed either form the sulfonic acids or are simply dissolved out.

Most distillates do not require extensive desulfurization to meet present day specifications. However, for the desulfurization of distillates containing a high percentage of sulfur no one has developed a practical and economic process which is generally applicable for the desulfurization of cracked distillates although some of the principal objections in desulfurizing cracked distillates with sulfuric acid, namely reaction solution and polymerization losses, have been overcome to a great extent.

Notable among the methods proposed for the treatment of cracked distillates with sulfuric acid primarily for the purpose of desulfurization is the low temperature treatment described by Halloran[4]. This

[2]Polymerization and Other Chemical Reactions in the Sulfuric Acid Refining of Cracked Distillates by Jacque C. Morrell, Jour. Ind. & Eng. Chem., July 17, 1927.

[3]Borgstrom and Reid, Oil and Gas Journal—June 16, 1927.

[4]R. A. Halloran, Oil and Gas Journal, Dec. 8, 1927.

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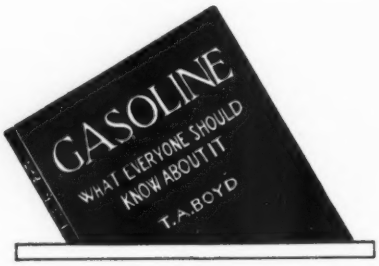


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process comprises washing a cracked distillate with caustic soda, subjecting the distillate to drying treatment with acid sludge, cooling the distillate to approximately—5° F. in a multi-stage cooling system during the treatment with the fresh sulfuric acid, separating and recirculating the sludge and finally washing and neutralizing the treated distillate.

Low temperature treatment of cracked distillates primarily serves the purpose of effecting partial desulfurization with a substantial reduction of the usual large losses by reaction solution and polymerization. In some cases the desulfurization of the distillate is more marked than with treatment at normal temperatures but in many cases desulfurization has not been improved by the low temperature treatment. To sum up, generally speaking, the principal advantages of low temperature treatment is in the reduction of losses rather than in the increase of desulfurization.

The distribution of sulfur in cracked distillates in some cases shows a maximum in the curve when the sulfur content is plotted against the per cent off. This would indicate possibilities in the removal of select cuts for drastic treatment or to be disposed of for other uses.

### Sweetening

The purpose of sweetening a petroleum distillate is for the removal of hydrogen sulfide and mercaptans. The commonly accepted reaction for sweetening is shown below:

a. $2NaOH + PbO \rightarrow Na_2PbO_2 + H_2O$

b. $2RSH + Na_2PbO_2 \rightarrow \begin{matrix} R{-}S \\ R{-}S \end{matrix}\!\!>\!Pb + 2NaOH$

c. $\begin{matrix} R{-}S \\ R{-}S \end{matrix}\!\!>\!Pb + S \rightarrow \begin{matrix} R{-}S \\ | \\ R{-}S \end{matrix}\!\!>\!Pb + PbS$

Reaction a. shows the formation of sodium plumbite by dissolving litharge in sodium hydroxide. Reaction b. shows the formation of lead mercaptide by the inter-action of the mercaptans and sodium plumbite. Reaction c. shows the conversion of the lead mercaptide to the corresponding disulfide with the formation of lead sulfide.

Recently Ott and Reid[5] showed the formation of intermediate compounds according to the following reactions:

The reactions between the mercaptan and the sodium plumbite (considered as $Pb(OH)_2$ and NaOH) may be of the following types:

1. $Pb(OH)_2 + HSR = Pb\begin{matrix} SR \\ OH \end{matrix} + H_2O$
2. $Pb(OH)_2 + 2HSR = Pb(SR)_2 + 2H_2O$
3. $2Pb\begin{matrix} SR \\ OH \end{matrix} = (SR)Pb{-}O{-}Pb(SR) + H_2O$
4. $Pb\begin{matrix} SR \\ OH \end{matrix} + NaOH = Pb\begin{matrix} SR \\ ONa \end{matrix} + H_2O$
5. $NaOH + HSR = NaSR + H_2O$

The above reactions showing the formation of basic mercaptides explain some interesting phenomena encountered in sweetening.

Dr. Jacque C. Morrell

The basic lead mercaptides break down readily into lead sulfide and an alcohol, explaining the precipitation of lead sulfide during sweetening without the intermediate step of adding sulfur. This reaction is similar to that pointed out by the writer in the distillation or heat treatment of cracked distillates containing lead mercaptides to form the corresponding sulfide and lead sulfide[6].

$$\begin{matrix} R{-}S \\ R{-}S \end{matrix}\!\!>\!Pb + \triangle \rightarrow \begin{matrix} R \\ R \end{matrix}\!\!>\!S + PbS$$

Ott and Reid[7] further show that when lead mercaptides are exposed to atmospheric oxygen, insoluble peroxides are formed which resemble the lead mercaptides. The authors refer to the previous work of Morrell and Faragher[8] who made the observation that oxidation by atmospheric oxygen is very slow and that only a small proportion of the mercaptides are converted to the disulfides. Ott and Reid agree with these observations and in addition show that the major oxidation products are peroxides.

Ott and Reid[9] in another paper dealing with the reactions of lead mercaptides with sulfur, show that many intermediate and additional products may be formed of varied colored hues ranging from yellow through orange and red to mahogany. This explains the many color changes which occur during the sweetening of cracked distillates. The role of lead sulfide in the sweetening of petroleum distillates has been a subject of controversy. Wendt and Diggs[10] have assigned to lead sulfide a purely catalytic action in promoting reaction of the mercaptans with sodium plumbite. Morrell and Faragher[11] have shown experimentally that lead sulfide is oxidized to lead sulfate which dissolves in sodium hydroxide to form sodium plumbite resulting in the usual sweetening reactions.

It has been observed that the consumption of sodium hydroxide is insufficient to account for the reaction.

| $PbSO_4$ | + | $4NaOH$ | → | $Na_2PbO_2$ | + | $Na_2SO_4$ | + | $2H_2O$ |
|---|---|---|---|---|---|---|---|---|
| Lead Sulfate | | Sodium Hydroxide | | Sodium Plumbite | | Sodium Sulfate | | Water |

The writer suggests the following explanation of this. Sodium mercaptides are oxidized directly by the oxygen to form the corresponding disulfide and sodium hydroxide and this reaction taking place simultaneously with the one shown above may be promoted by the pres-

[5]Jour. Ind. Eng. Chem., August, 1930.

[6]Systematic Refining of Cracked Distillates—Jour. Ind. Eng. Chem., July 19, 1926.

[7]Jour. Ind. Eng. Chem.—Auto Oxidation of Lead Mercaptides, August, 1930, Page 882.

[8]Jour. Ind. Eng. Chem. 19, 1045, 1927.

[9]Loc. cit. Page 884.

[10]Jour. Ind. Eng. Chem., 16, 1114, 1924.

[11]Loc. cit.

ence of lead sulfide. The reaction is shown below:

$$\underset{\text{Sodium mercaptide}}{2RSNa} + \underset{\text{Water}}{H_2O} + \underset{\text{Oxygen}}{[O]} \rightarrow \underset{\text{Dialkyl disulfide}}{\begin{matrix} RS \\ | \\ RS \end{matrix}} + \underset{\text{Sodium hydroxide}}{NaOH}$$

Morrel and Faragher[12] also showed that the sulfides of various metals such as mercury, silver, copper, nickel and others may be similarly oxidized to the sulfates which react with sodium hydroxide and subsequently with the mercaptans to form the corresponding mercaptides. These mercaptides of the various metals will react with sulfur to form the corresponding metallic sulfides and the di-sulfide, thus serving as a basis for sweetening oils. The mercaptides of copper and other salts may be removed by adsorbents such as fuller's earth and under suitable economic conditions such salts or their solutions may be used for sweetening purposes, with the added advantage of eliminating the use of elementary sulfur from the sweetening process.

### Use of Elementary Sulfur in Sweetening

The writer[13] has consistently objected to the general use of elementary sulfur in the sweetening of cracked distillates.

For example, the addition of minute quantities of sulfur to a cracked gasoline otherwise stable and exposure to sunlight will cause the formation of tarry substances which discolor the gasoline. There are many possible reactions between the components of a cracked distillate and elementary sulfur, especially under the influence of heat and light. Further, in connection with the distillation of treated and sweetened pressure distillates "The sourness may be due to the formation at elevated temperatures of hydrogen sulfide and possibly some mercaptans from the sulfides, disulfides, and other sulfur compounds present in the cracked distillate. Elementary sulfur would also cause the formation of hydrogen sulfide."

Friedman[14] showed that sulfur reacts with unsaturated hydrocarbons to form unsaturated sulfur derivatives. Faragher, Morrell and Comay[15] showed that elementary sulfur reacts with hydrocarbons to form hydrogen sulfide.

Under oxidation conditions, in the presence of air and moisture at atmospheric temperatures sulfur will oxidize to sulfurous and sulfuric acid. The latter, in turn, will react with the cracked distillate to discolor it. Recent experiments have shown that hydrogen sulfide, mercaptans and other sulfur compounds of the sulfide and more refractory types are produced when pressure distillates are heated with sulfur at temperatures ranging between 350 and 400° F. and above; hence to obtain a sweet gasoline distillate from a sweetened cracked distillate which contains elementary sulfur or certain sulfur compounds, the temperature must be very carefully regulated. The higher the temperature of redistillation the more drastic the final sweetening treatment required (where sweetening is desired).

The work of Faragher, Morrell and Comay[16] on the thermal decomposition of organic compounds points out some of the many possibilities in this respect. The thermal decomposition of mercaptans produce hydrogen sulfide and elementary sulfur. Hydrogen sulfide mercaptans and thiophene-like products are produced when sulfides are thermally decomposed. The disulfides produce hydrogen sulfide, elementary sulfur, sulfides and thiophene-like derivatives. Thiophenes undergo no decomposition even at temperatures of 1600° F. The compounds formed (and their relative proportions) from the thermal decomposition of the organic compounds of sulfur depend upon the temperature, time and the usual factors which determined the course of a chemical reaction.

### Sweetening With Hypochlorite Solutions

The treatment of petroleum distillates with hypochlorite solutions such as those of calcium and sodium in the United States is limited practically to straight-run products and those recovered from gases. The principal purpose of hypochlorite treatment is to sweeten the distillate by oxidation of the mercaptans. Alkaline solutions are used preferably for the purpose of preventing chlorination.

In the treatment of straight-run gasoline with hypochlorite solutions the oil is preferably first washed with strong caustic, water washed and then hypochlorite treated (Sodium hypochlorite is preferred). The hypochlorite solution preferably contains between 5 and 10 grams of available chlorine per gallon of solution and from 3 to 5 grams per gallon of excess caustic. Preferably the distillate is washed with alkali and water following the hypochlorite treatment.

The use of hypochlorite solutions in the refining of cracked distillates, even though strongly alkaline, has been generally unsuccessful and cracked distillates are seldom so treated. The resulting products, in most cases, have been unstable and go off-color on storage. There are some cases on record where straight-run distillates, when treated with hypochlorite solutions and subsequently blended with cracked distillates, have brought about discoloration of the blend on storage. Where the hypochlorite has been successfully applied, best results have been obtained with dilute solutions.

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**Pittsburgh Equitable Meter** Co., Pittsburgh, Pa., advertises its name and products by large electric signs and large floodlighted replicas of the gas meters and water towers it manufactures, built on the roof of its two plants at Pittsburgh.

At each end of the Equitable division plant is a replica of a gas meter, one being of tin and the other of cast iron. Both have illuminated dial registers. On top of the Pittsburgh division plant is a replica of one of its water towers.

[12]Local cit.
[13]Morrell and Egloff, Refiner and Natural Gasoline Manufacturer, Volume 2—No. 7, July, 1923—Morrell—Systematic Refining of Cracked Distillates, Jour. Ind. Eng. Chemistry, July, 1926.
[14]Petroleum 2, 693, 1916.
[15]Jour. Ind. Eng. Chem., May, 1928.
[16]Loc. cit.

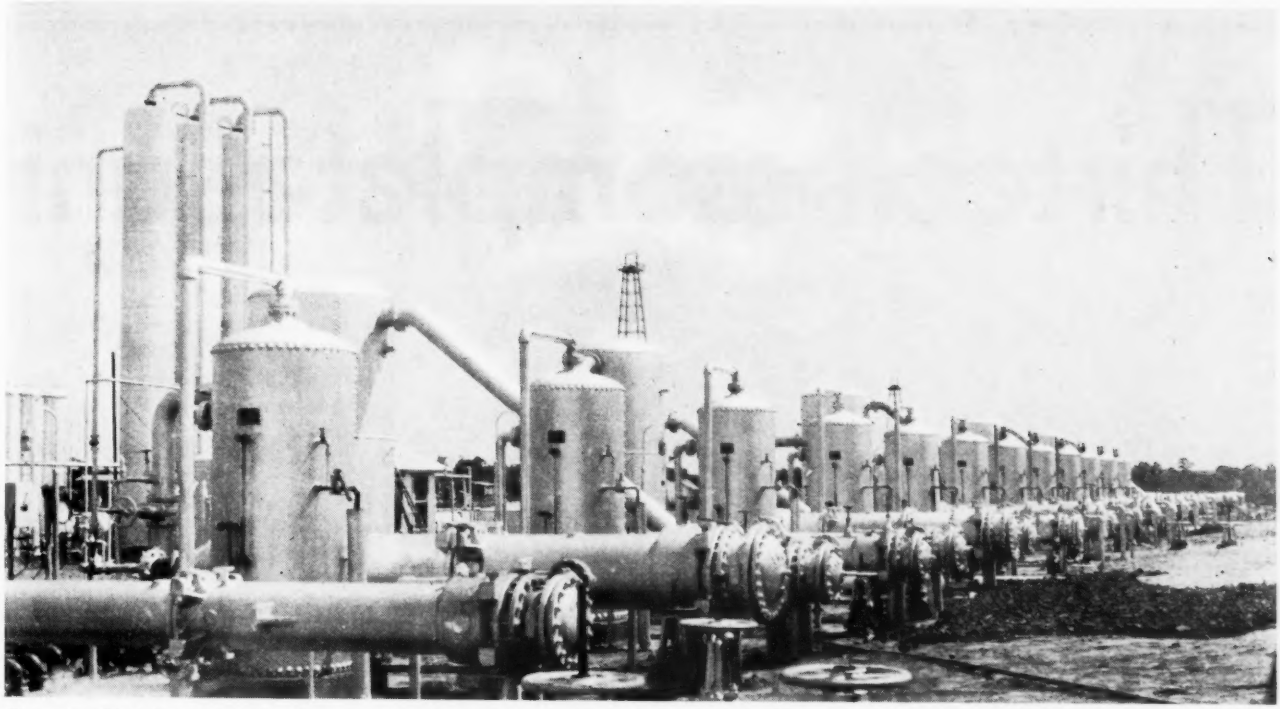

Fig. 1—Field separator, inter and after cooler elements in a plant constructed to meet all requirements from oil lift to liquefied vapor fractions

# The Trend in Design and Equipment of The Modern Gasoline Plant

By Frank P. Peterson*

THE 1930 natural gasoline plant in its equipment features is to the 1910 edition about as the 1930 refinery is to its counterpart of this same remote date. Not that either has introduced any miracles of physical or chemical accomplishment such as other industries have developed, but so far as equipment and application is involved this is true.

It is interesting to note first the extraordinary development of specialized talent which has been brought to the oil industry through this minor branch. When it is recalled that 20 years back we did not know the actual composition of the raw materials of casinghead gas; that we conjectured only and were without means for exact determination of the knowledge sought, we may be proud of our progress.

That those means were worked out through more than a decade of determined and unremitting effort, and that that effort had to deal with one of the most obtuse angles of chemico-physics involved in the most obstinately resistant group of inert hydro-carbon compounds we may indeed congratulate the engineers and chemists who have actually solved about all the problems of the productive phases at least.

We observe that the trend in this branch has yet to take into account the academic as well as the material and simple usage of equipment devised, for not quite all has yet been done. Especially in the detail of fractionation we fail to appreciate fully the magnitude of accomplishment.

Such men as Burrell, Oberfell, Thompson, Carney and Sidney Smith have made their names significant to the industry in their relation to the several details with which they have been especially concerned. Burrell for solution of problems involved in the fractional analysis of natural gas; Oberfell and Carney for their efforts toward the solution of the diversified problems as a whole; Thompson and Smith for their efforts to unravel the intricacies of fractionation of the natural gasoline product have contributed much.

The ultimate solution of what was believed at least improbable now appears probable for we now realize commercial yields of pure fractions from ethans to the pentanes and hexanes. From this point the refiner must carry on until, from the academic viewpoint the problem would seem to spread to proportions limitless in their scope. All this has served to the end that the natural gasoline branch of the industry may offer products definitely and exactly to specifications whatever may be called for from materi-

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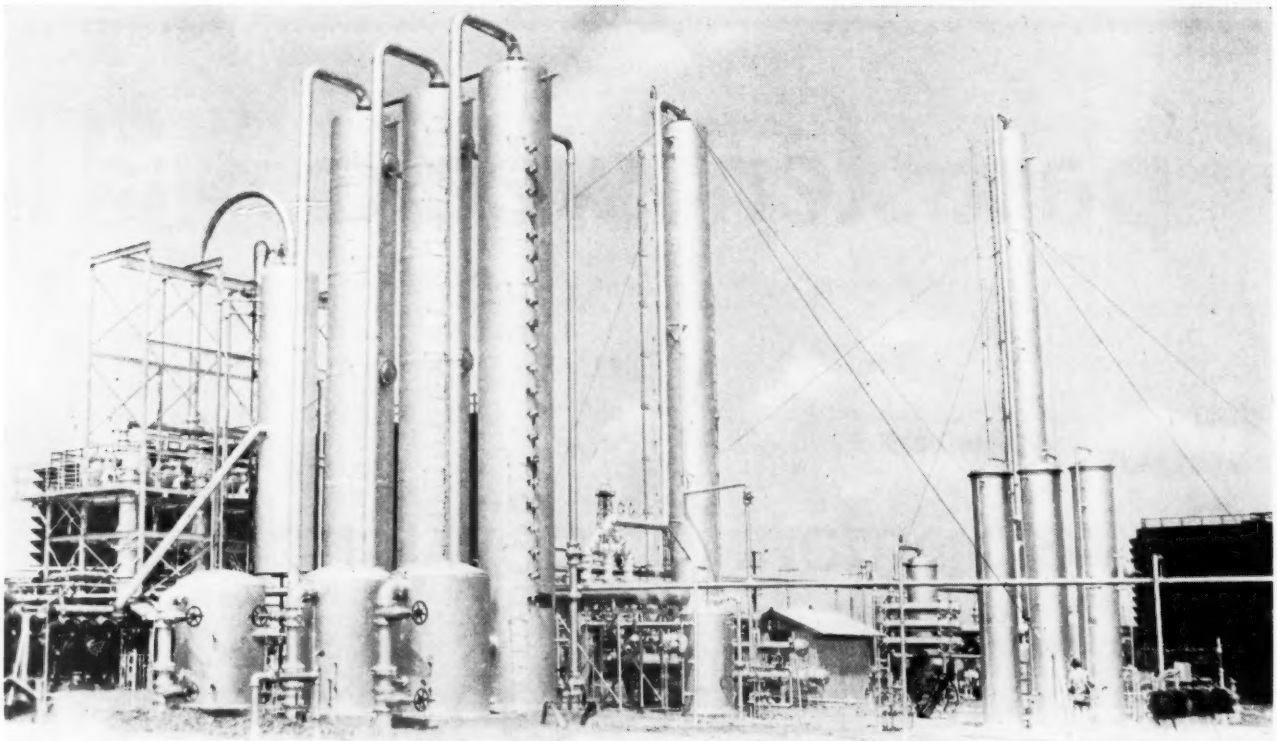

**Fig. 2—View of absorbers, stills and fractionator columns**

als available in wet natural gas.

We cannot deal with the subject of fractionation without referring again to the subject of equipment. Here as in other details of the business the trend has been toward a limit of refinement compatible only with perfection in character of the product sought, almost regardless of cost. Seemingly no detail of perfection in equipment is unconsidered so long as it may contribute to quality of products first and efficiency second. I might add that the third element i. e. the safety of the human forces in control has not been overlooked.

Gas engine compressors now have to encompass a wide range of work suitable both for recovery of casinghead gas products and for gas-lift work in the producing of crude oil. In the compressor equipment provision must be made for variance from the one to the other extreme of requirement.

Makers of the equipment have responded with a comprehensive range of interchangeable cylinder sizes. The operative field has developed a personnel who stand ready to make the cylinder exchanges at a moments notice and to do it correctly. As a consequence the modern gasoline plant goes in prepared to function smoothly from the strenuous kick-off pressure, on through the steady lift period or production of oil to the period and range of vacuum gathering or gas, through the moderate absorption recovery range and beyond, if necessary, to repressuring.

For the deep areas of production let us assume a kick-off requirement of 1500 pounds per square inch, a steady flow range of 150 to 400 pounds, a vacuum of 10 to 12 inches mercury, a mean recovery plant pressure of 30 pounds per square inch and a final repressure requirement of 500 pounds. Some, but not all, of the foregoing will be required almost overnight. The total time the plant may stay in operation may be expected to reach to a period of from three to 25 years.

**Fig. 3—An ultra modern water cooler**

Two cycle engines have held so persistently to this highly specialized branch of the industry that it is not surprising to find them now equipped with fuel injection valves and double acting power cylinders, competing closely with their four cycle prototypes in fuel economy.

This calls for fuel delivery at pressures consistently above the standard for other requirements of lease and plant, usually 15 to 20 pounds per square inch.

Water, so extensively required, in oil fields is almost invariably contaminated with about everything; mud or silt and all the scaling compounds, salt, oil, B. S., algae, alkalies, and even acids. These must all be met and accounted for in some way. Treaters, settling basins, return steam condensers, water tube or Scotch marine type boilers, corrosion resisting metals, everything in the whole range of equipment and cures is being applied.

Tall aerial coolers of the wide-louvered long and narrow type are supplanting entirely the old squat, square, window-blind, slatted type which had their homely origin in California. A glance at Fig. 3 accompanying will disclose that one of these modern type towers now aspires to a slatted, ventilated form of the wide-louvre. So far no forced draft ventilation has appeared in these towers and it seems hardly likely that it may.

Heat exchange and cooling equipment runs largely to the closed tubular type. While this trend is predominant it seems subject to reasonable question in the writer's mind in view of the appalling water conditions in numerous cases. And let it be confessed that this is a retraction in part from expression of some five years past on this writer's account.

Pumps run to centrifugals because of the lessened packing difficulties. Auxiliary drive goes almost entirely to electrical central station. Although the ground space is usually ample, direct connected, vertical, four cycle engines seem to have the preference with three phase 60-cycle alternators. Of course, all control switch and lighting equipment must be of vapor proof safety type. Motors must also be of the explosion proof character.

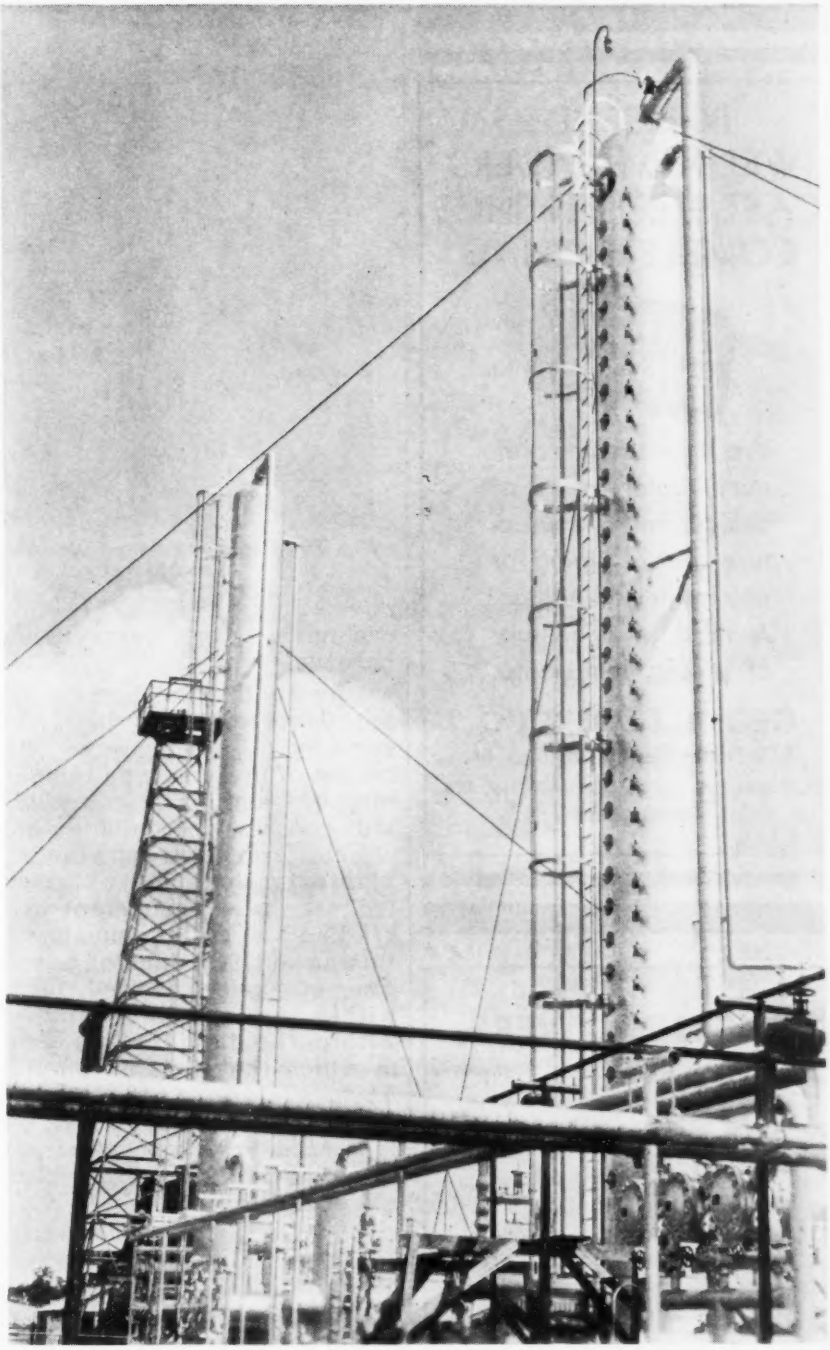

**Fig. 4—Two worthy competitors for honors, each accomplishing excellent results in stabilization of natural gasoline**

Central electric station equipment while involving the employment of skilled electricians lends itself admirably to all auxiliary requirement even to moderate welding and a variety of repair and construction tool equipment.

The vertical direct connected types minimize building investment and belted connections. Building space requirements are becoming minimized. Steel-frame iron covered buildings of standard sectional type lending themselves conveniently to extension or contraction in length find almost universal favor now.

Stills are of the vertical type and in present practice are frequently housed. Multiple bubble cap trays constitute the interior structure requirements in absorber, still, fractionator columns. These examples of diffusion and contacting equipment have, without doubt, been brought to an unprecedented degree of perfection and efficiency by engineers and designers of

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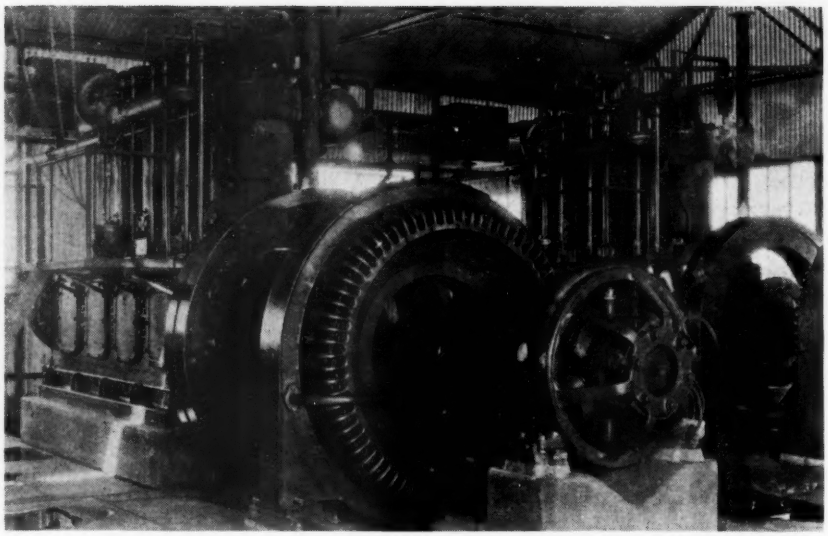

**Fig. 5—Direct-connected gas engine driven alternator unit in a large gasoline plant in Oklahoma's Seminole sector**

casinghead gas recovery apparatus.

Directly fired stills seem to be obsolete, steam is used universally. Moderately high ranges of pressure and temperature are employed in fractionator columns for finishing commercial grades of gasoline. Column extensions and reflux control to selected temperature gradients provide means for cutting out fractions of any degree of purity desired, either within the gasoline group or within the liquid vapor group in which the plant is complete. Absorbers are of the single column, single phase form with reference to absorbent circulation and cooling and are highly efficient.

The control of all operating functions has been developed to a degree highly automatic and free from human elements. Boiler feed water and fuel, stills and fractionators, oil circulation, lubrication, fuel delivery and distribution have been turned over to the instrument. So has all field functions of gas pressure and the intermittent application of pressure for lifting oil from the wells been made largely automatic.

The liquefiable, volatile intermediates between gasoline and methane will be fully accounted for in the future, if present efforts constitute a guide. At present the production of natural gasoline amounts to nearly 7 per cent of the production of crude oil. It would be difficult to predict what the intermediates may add to our total petroleum fuel resource.

The writer is indebted to Carter Oil Co. for the privilege of using the accompanying pictures for publication.

## NEW EQUIPMENT

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# New Refining Patents

**Oil From Shale. U. S. P. 1,778,515, Oct. 14, 1930, application filed Dec. 16, 1920; Wm. H. Hampton.**

DIFFICULTIES encountered in obtaining high yields of oil from shale by ordinary distillation methods, or even by solvent extraction, are explained by supposing the union of shale hydrocarbons, and their bonding to the mineral particles, to be much more resistant to heat and solvents than is the case in oil sands, asphalt rock and the like. Search for a means of overcoming this resistance led to the discovery that thermal shock renders the shale hydrocarbons amenable to heat treatment.

For practical purposes, the way in which the thermal shock is applied is important; it is not sufficient merely to heat the shale suddenly to the effective temperature. It has been found that the greatest effect is obtained by heating crushed shale with a heavy oil, grinding while hot to form an intimate mixture of oil and fine shale particles, and adding this mixture suddenly, at 300° or 400° F., to heavy oil at an effective digestion temperature, say 700°F. This is done in a suitable digester, and the digestion treatment is carried far enough to separate and recover the shale hydrocarbons.

The residual mineral from the shale can be used for paving purposes, or it can be separated from the oil by a centrifuge treatment. The net result of the new method is a substantial increase both in the quantity and the quality of the hydrocarbons recovered from a given amount of shale, as compared with older methods. Apparatus suitable for carrying out the process is described, and made a part of the claims.

**What Is Claimed**

Process and apparatus for obtaining valuable products from bituminiferous shale by digesting the finely divided shale with heavy oil at temperatures over 500° but not above 700°F., centrifuging without cooling or thinning, and returning separated oil to the digester while still hot.

* * *

**Pressure Cracking. U. S. P. 1,778,157, Oct. 14, 1930, application filed Nov. 17, 1920 and renewed Dec. 27, 1924; Lester Kirschbraun, Assignor to Universal Oil Products Co.**

THIS invention relates to an improvement in pressure cracking, whereby the heat and pressure are adjusted to vaporize a substantial portion of the lighter fractions, and the higher boiling cuts are heated separately with an incondensible gas to give an additional yield of light distillates.

To accomplish this, the raw oil (to which may be added the reflux or heavy distillate from the process) is charged to the heating tubes and heated under pressure to a cracking temperature. The cracked oil then passes to a vapor zone, where the lighter fractions are vaporized and withdrawn. The heavier fractions remaining in the vapor chamber are withdrawn and sprayed into the top of a separator, in which the exposure to a hot incondensible gas occurs. This gas is fed into the bottom pool of the separator, and is bubbled upward under pressure through the descending liquid. In this way intimate contact of the oil with the hot gas is obtained, and further cracking to form light distillates is accomplished.

**What Is Claimed**

A continuous method of treating oils by subjecting them to a cracking temperature and pressure to cause substantial cracking, separately removing the vaporized and unvaporized portions, condensing the cracked vapors and collecting the distillate and incondensible gas, passing the unvaporized portion into an enlarged zone under lower pressure, and injecting part of the incondensible gas into this oil to cause distillation of a portion thereof.

* * *

**Distilling Oils. U. S. P. 1,778,445, Oct. 14, 1930, application filed Aug. 9, 1928; Wm. H. Bahlke, Assignor to Standard Oil Co. of Indiana.**

AN IMPROVED procedure for distilling heavy oils to obtain sharp-cut fractions, light in color and high in quality, involves superheating of the oil vapor without cracking it. This is done by completely vaporizing the oil and superheating it to a predetermined extent in a heating coil, then passing it into a fractionating tower of the bubble tray type.

It has been found that complete vaporization of the oil in the heating coil causes a small amount of solid matter to be deposited, which makes the oil paler in color. Furthermore, sharper cuts are obtained than if the vapor were not superheated, so that the color is more diluted, and this also aids in making the color of the distillate lighter.

The improved process is applicable to the recovery of small fractions of heavy from lighter oils, or to the removal of a given proportion of heavy oil to impart desired properties to the remainder. For instance, it is especially suitable for removing small amounts of kerosine from gasoline to give a lighter gasoline.

**What Is Claimed**

Distilling completely vaporizable oils having a viscous oil as the heaviest fraction, by passing the oil continuously through a heating coil to vaporize the oil completely and to superheat the vapors without decomposing them, passing the vapor into a fractionating column and condensing therefrom the viscous fraction.

* * *

**Dewaxing Oils. U. S. P. 1,779,287, Oct. 21, 1930, application filed July 2, 1929, and in Germany May 16, 1927; Johann K. Pfaff, Kurtz Bottger and Adolf Sieweke, Assignors to Deutsche Gasolin Aktiengesellschaft.**

IN DEWAXING mineral oils, the paraffin sometimes precipitates in a greasy form which is difficult or impossible to separate from the viscous oil by filtration. It has now been found that such precipitates can be obtained in a readily filterable form by co-preciptation therewith of an adequate amount of a crystalline substance which is soluble in the oil.

The new process is entirely different from the known method of inducing crystallization by seeding a solution with a well-formed crystal of the same substance which it is desired to precipitate. The new method uses a different substance, in substantial amount which is generally about equal to the amount of paraffin to be precipitated; and rapid crystallization may be effected, whereas in the seeding method slow crystallization is essential. The preferred crystalline substance for the co-precipitation is napthalene, which is cheap and easy to separate from the paraffin; but anthracene, phenanthrene, dichlorobenzene and the like are also effective.

**What Is Claimed**

Dewaxing petroleum distillates, Montan wax distillates and the like by dissolving in the paraffin or wax solution, while hot, an amount about equal to the weight of paraffin of a chemically different substance which crystallizes well and is soluble in the same solvent, cooling to at least 0 degree C., filtering, and separating the added substance from the paraffin or wax by distillation.

* * *

**Making Lubricants. U. S. P. 1,777,307, Oct. 7, 1930, application filed June 4, 1929; Eugene C. Herthel and Harry L. Pelzer, Assignors to Sinclair Refining Co.**

IN AN improved method for distilling refined or partially refined lubricants from raw stocks, vaporization of the lubricant fraction is effected by direct heat exchange with the hot vapor from a vapor phase cracking unit. The temperature of the hot vapor is first regulated to avoid decomposition of the lubricant fraction, and decomposition due to local overheating is avoided by the direct heat exchange arrangement. As a further advantage, the partial pressure of the hot vapor is utilized to reduce the partial pressure of the vaporized lubricant components.

Another important feature of the

invention is that the stock is supplied to the operation as a mixture with quick lime or caustic soda, so that the lubricant fractions vaporized from the raw stock are in contact with the caustic until vaporized.

In carrying out the invention, the mixed vapor from a vapor phase cracking operation is scrubbed to remove tar and regulate the temperature. The mixture of raw stock and alkali is introduced into the vapors during the scrubbing operation, and the lubricant fractions are vaporized from the raw stock by heat exchange with the vapors.

**What is Claimed**

In making lubricants, scrubbing the vapor from a vapor phase cracking operation, mixing caustic alkali with the raw stock, and introducing this caustic alkali-lubricating oil stock mixture into the vapors in the scrubbing operation, successively fractionating and refluxing the vapor mixture coming from the scrubbing operation, condensing the lubricant fractions from the fractionating operation and discharging them without permitting them to return to the vapor phase cracking operation, condensing in the refluxing operation the vapors boiling higher than the desired low-boiling product of the vapor phase cracking operation and supplying this reflux condensate to the vapor phase cracking operation, and discharging from the scrubbing operation the tar, including any unconsumed alkali and solid reaction products of the alkali, from the scrubbing operation.

* * *

**Oil Still. U. S. P. 1,776,437, Sept. 23, 1930, application filed May 23, 1925; Wm. A. Jones, Assignor to Babcock & Wilcox Co.**

THIS invention relates to an improved design for support and setting for oil stills, to increase their efficiency and safety in operation. It is characterized by a furnace chamber made up primarily of a monolithic structure which supports the weight of the still and has vertical walls which are continuous around the chamber. A roof arch of refractory brick covers the furnace chamber, and provision is made for the heater tubes, connected to drums outside the chamber, to enter the furnace chamber.

This construction provides a setting in which the walls of the furnace chamber, in case of an accidental explosion within the chamber, withstand the pressure, only the roof arch being destroyed. In this way, communication of explosion damage to adjacent settings in a battery of stills is avoided. Since the monolithic walls are not sufficiently resistant to heat, they are lined with refractory brick.

Another feature of the invention is a system of parallel upper longitudinal drums, and a cross drum connected to each of the longitudinal drums, of which one is fixed and the others are movable, on a sliding support, toward and from the fixed drum. This allows for expansion and contraction in the system, and permits use of an efficient arrangement for applying heat to other drums.

**What is Claimed**

A fluid heater having upper longitudinal drums, an upper cross drum connected to their front ends, a lower cross drum connected to their rear ends, tubes connecting the cross drums, front and rear supporting walls for the drums, a fixed connection from one longitudinal drum to the rear wall and sliding connections from the other longitudinal drums, and a sliding connection from the upper cross drum to the front wall; and a furnace chamber having a refractory brick wall surrounded by a hardened poured monolithic wall.

* * *

**Cracking Heavy Oils, U. S. P. 1-776,985, Sept. 30, 1930, application filed April 25, 1927; Archie L. Strout, Assignor to Standard Oil Co. of California.**

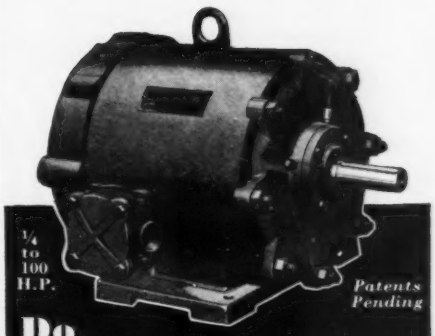
THIS invention relates to improvements in heat economy in the cracking method in which the oil, after heating to the cracking temperature, is vaporized into a vapor chamber for recovery of the lighter fractions. Owing to the expense and difficulty of using conventional heat exchangers for this particular purpose, a departure from previous practice is made, in that direct contact is effected between the vapors of the oil to be recycled and the fresh oil.

This is performed in such a way that the cycle stock and the fresh feed oil are both heated relatively hot before passing into the heating zone, while at the same time the recovery of the heat leaves available a quantity of relatively cold oil for use in the dephlegmating tower. Another feature is that the heated feed oil and the resulting cooled cycle stock, or different portions thereof, are used to maintain in the dephlegmator sufficient cooling medium to form the desired reflux.

To accomplish these purposes, the feed oil is divided into portions, which are successively exposed to direct contact with the hot vapors of the cycle stock, so that each portion encounters the vapors of the preceding contacting step. All or part of the resulting mixed portions are then used as cooling medium in the dephlegmator.

**What is Claimed**

Heating oils to a cracking temperature, vaporizing, removing part of the vapors, including the lighter fractions, from the vaporizing chamber to a dephlegmator, removing another part of the oil from the vaporizing chamber as liquid having an A. P. I. gravity higher than that of the residuum ultimately to be formed, vaporizing part of this liquid to produce a cycle stock, splitting the feed oil into portions and progressively effecting contact of the cycle stock vapor with different portions of the feed oil for use as reflux in the dephlegmator.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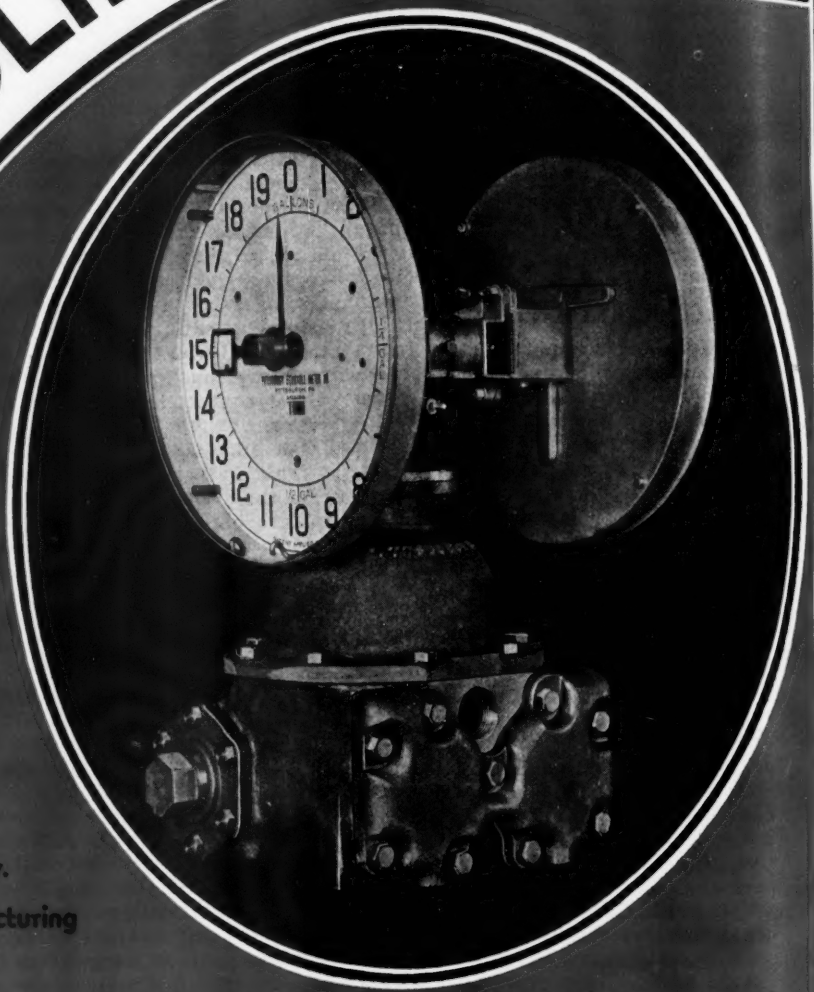

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# Maintenance of Group Differentials Proposed in Gasoline Rate Cut

By John Power

N. P. N. STAFF WRITER

ST. LOUIS, Dec. 3 AMENDED by the Sante Fe to include the maintenance of the present freight rate differentials between Kansas, Oklahoma, and North Texas, the proposal of the Missouri, Kansas, and Texas Railroad and the Frisco Lines to meet threatened gasoline pipeline competition by cutting freight rates on gasoline from pipeline zone points was discussed before the standing Southwestern Freight Rate Committee in St. Louis.

No action was taken by the committee, which convened under the chairmanship of Walter J. Dowlin. It will consider the testimony and make a report to the executive committee of the railroads, which meets monthly. A meeting of the committee was scheduled for the succeeding day, but discussion of the freight rate cut was not docketed for consideration at the time.

D. L. Meyers, assistant freight traffic manager of the Sante Fe did not present the amendment offered by his road until nearly the close of the hearing. By that time it was apparent that most of those objecting to the cut as originally offered based their objections on the two points covered by the Sante Fe's amendment—the preservation of rate differentials and the payment of loaded car mileage.

Other objections to the proposed reductions were based on the belief that such a change would disrupt the relationships of points of origin far beyond the limits outlined in the original proposal, or taken care of in the amendment as offered by the Sante Fe. One objection to any action being taken by the railroads at the present time was offered that such a move was premature in that the gasoline pipeline rates have not as yet been made public, and that any reduction made with the idea of meeting such competition was a shot in the dark.

The meeting opened with those in favor of the proposed reduction having the floor. The necessity for some sort of rate relief for companies manufacturing their product near a Mid-Continent source of supply, but competing in the sales territory to be served by the gasoline pipelines was stressed. These companies, it was said, must either have the necessary rate belief, or build gasoline pipelines of their own.

In support of this contention, it was said that although the companies operating gasoline pipelines might not use their lower transportation costs to cut the delivered price of gasoline, in times of depression and overproduction the price of gasoline might easily fall below the cost of manufacture. At such a time the operators of a gasoline pipeline might be able to more than meet all competitive delivered prices, and still show an overall profit from its transportation system.

Freight rate relief that would enable refiners similarly situated geographically, but without gasoline pipeline facilities, to meet competition in the same sales territory was imperative. The only alternative, it was stated, was for these companies to build their own gasoline pipelines, either individually, or to join with refiners in the same situation.

The proposal as offered met with little support, other than that given it by those who favored any sort of freight rate relief. The unfavorable position in which the original proposal placed the North Texas refiners was presented by the Wichita Falls delegation, led by Ed. P. Byers, and R. G. Cocanower.

The proposed cut in rates from Oklahoma points to Kansas City, St. Louis and Chicago meant a lowered delivered price of about $60, $64, and $73 per car respectively it was shown. That is, competing refiners from the favored points could offer their gasoline in tank car lots at these prices under the delivered prices which the North Texas refiners could offer.

Unless the present two and one half cent differential between group three points and North Texas was maintained gasoline pipelines would have to be built to serve the latter area. Two such lines, one south to the Gulf coast, and one north to connect with one of the gasoline pipeline systems serving Oklahoma are already rumored, it was said.

Because of the disruption a freight rate cut in Oklahoma and North Texas would cause in the relationship now existing between points of origin, the Sinclair company, announced it was opposed to any such move. It's representative stated further that the company would oppose any such move to the limit, carrying its fight before the Interstate Commerce Commission, if necessary. Existing marketing conditions extending as far east as western New York and Pennsylvania would be affected, it was said.

In characterizing the proposed freight rate reductions as a shot in the dark in the railroads effort to meet pipeline competition, A. F. Winn, Skelly Oil Co., said that the effect of the pipeline transportation of gasoline on marketing conditions was not yet known, and that since the rate schedule of

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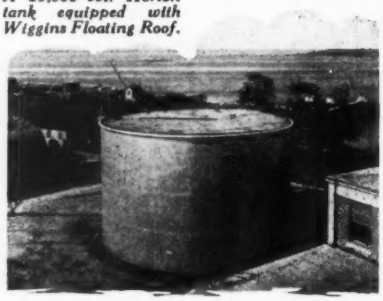

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the pipeline in which Skelly Oil Co. was interested had not been announced, the proposed rate reductions to meet its competition could be based only on conjecture.

He said further that it was contemplated by the companies operating the line that prices asked for gasoline sold in the area served by the line would be the going price at the time of sale, plus the freight rate from group three. He contended that no move was necessary at present, and that the necessary move was not yet apparent.

When the arguments pro and con had been summed up, it appeared that the rate reductions as originally proposed had few, if and any, supporters. The position of the North Texas refiners if the rate differential now in effect was widened had been made clear; the attitude of the shippers toward the payment of loaded car mileage, which the original proposal eliminated, had been stated; the position of those who opposed the disturbance of existing conditions at all had been stated, and those who wanted rate reductions to enable them to compete with the companies operating gasoline pipelines into the sales territories served by both classes of refineries had had their say.

It was then that the Sante Fe offered its amendment, which provided that existing freight rate differentials be maintained, and that the present payment of loaded car mileage be continued. The freight rate cut proposed, together with the amendment offered by the Sante Fe, will be considered by the executive committee.

# NEW PATENTS

**Prepared by R. E. Burnham, patent and trade-mark attorney, 1343 H Street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 20c each. State number of patent and name of inventor when ordering.**

## November 4, 1930

### REFINING

**Process of treating hydrocarbons**—Clarence J. Frankforter, Lincoln, Neb., assignor to Frankforter Oil Process, Inc., same place. Filed Aug. 27, 1929. No. 1,780,873.

### PRODUCTION

**Apparatus for the removal of obstructive matter from oil-wells**—Charles Larsen, Denver, Colo. Filed Sept. 6, 1927. No. 1,780,428.

**Rotary core-drill**—John E. Shows, Harrisburg, and William T. Dunn, Houston, Tex. Filed Nov. 2, 1927. No. 1,780,447.

**Well-tool**—Leland S. Hamer and John Q. Little, Long Beach, Calif. Filed Dec. 3, 1928. No. 1,780,482.

**Grab for drill-rods and the like.**—Harry E. Brown, Wichita, Kans. Filed May 3, 1929. No. 1,780,699.

**Intermittent gas-lift pump**—Merton T. Archer, Pittsburgh, Pa., assignor to National Supply Co., Toledo, Ohio. Filed Apr. 25, 1928. No. 1,780,808.

**Sucker-rod turner**—Frank H. Hall, Bradford, Pa., assignor to Bovaird & Co., same place. Filed July 16, 1928. No. 1,780,877.

**Well-screen** — Martin F. Kettler, Houston, Tex. Filed July 18, 1929. No. 1,780,882.

### MISCELLANEOUS

**Automatic liquid-fuel dispenser**—Charles Brahy, New York, N. Y. Filed Oct. 8, 1929. No. 1,780,292.

**Grease**—Otto C. Schmidt, Sharpsburg, Pa. Filed Nov. 17, 1928. No. 1,780,315.

**Automatic tank-loader for fuel-trucks**—Charles E. Spinney, West Lafayette, Ind. Filed Oct. 1, 1927. No. 1,780,605.

**Metal amino carbonyls and process of making the same**—Philip S. Danner, Point Richmond, and John E. Muth, Berkeley, Calif., assignor to Standard Oil Co. of California. Filed Sept. 26, 1927. No. 1,780,643.

## November 11, 1930

### REFINING

**Process of and apparatus for steam distillation**—Eugene H. Leslie and Edwin M. Baker, Ann Arbor, Mich. Filed May 11, 1923. No. 1,780,977.

**Method and means of dehydrating oil**—William L. Palmer, Long Beach, Calif., assignor to National Dehydrator Corporation. Filed Apr. 4, 1927. No. 1,781,076.

**Process for cracking petroleum oil**—Robert T. Pollock, New York, N. Y., assignor to Universal Oil Products Co., Chicago, Ill. Filed Mar. 9, 1927. No. 1,781,128.

**Art of refining hydrocarbons**—Eugene C. Herthel, Chicago, Ill., assignor to Sinclair Refining Co., New York, N. Y. Filed Feb. 29, 1928. No. 1,781,388.

**Cracking of oils**—Eugene C. Herthel, Chicago, Ill., and Edward W. Isom, Locust Valley, N. Y., assignors to Sinclair Refining Co., New York, N. Y. Filed Jan. 7, 1925. No. 1,781,390.

**Apparatus for fractionally extracting petroleum hydrocarbons with alcohol**—Theodore A. Werkenthin, Lima, Ohio, assignor to Solar Refining Co., same place. Filed Dec. 30, 1927. No. 1,781,420.

**Process of fractionally extracting petroleum hydrocarbons with alcohol**—Theodore A. Werkenthin, Lima, Ohio, assignor to Solar Refining Co., same place. Filed Dec. 30, 1927. No. 1,781,421.

**Manufacture of lubricants**—Felton S. Dengler, Port Neches, Tex., assignor to Texas Co., New York, N. Y. Filed Oct. 15, 1926. No. 1,781,444.

**Oil-treating apparatus** — James J. Fearis, Smackover, Ark. Filed Feb. 25, 1926. No. 1,781,632.

# Increases in State Gasoline Taxes Retard Motor Fuel Consumption

By James W. Martin* and Marshall Harris**

IN 1919 four states, Colorado, New Mexico, North Dakota, and Oregon, imposed gasoline taxes, the rates ranging from 0.25-cent a gallon in North Dakota to 2 cents a gallon in New Mexico. In 1929 all of the 48 states and the District of Columbia had such taxes, the rates varying from 2 cents to 6 cents a gallon.

Total revenue from the state gasoline taxes, as shown in Table I, increased from $1,002,514 in 1919 to $431,311,519 in 1929. The number of gallons of fuel taxed has more than doubled during the past five years. The phenomenal spread in this method of raising revenue and the continuing increase in rates is primarily an outgrowth of the endeavor of states to finance their road projects.

Since in theory the tax is imposed on the fuel consumer, who thus pays roughly in proportion to his use of the highways, and in view of its widespread use and of the tendency toward increased rates, it is proposed in this paper to apply certain statistical tests to determine whether the tax burdens producers of fuel as well as consumers.

*Director, Bureau of Business Research, University of Kentucky.

**Assistant in Farm Management, University of Kentucky.

## Table I

### The Amount of Gasoline Taxed and the Revenue Therefrom*

| Year | Gasoline Tax, Net Earnings | Amount of Gasoline Taxed (gallons) |
|---|---|---|
| 1919 | $1,022,514 | |
| 1920 | 1,363,902 | |
| 1921 | 5,382,111 | |
| 1922 | 12,703,088 | |
| 1923 | 38,566,338 | |
| 1924 | 60,442,295 | |
| 1925 | 148,358,087 | 6,457,783,284 |
| 1926 | 187,603,231 | 7,883,983,560 |
| 1927 | 258,838,831 | 9,366,651,560 |
| 1928 | 304,871,766 | 10,178,344,771 |
| 1929 | 431,311,519 | 13,400,180,062 |

*United States Department of Agriculture, Bureau of Public Roads.

### Effect of Gas Tax on Prices of Fuel

The most obvious test is to compare prices of gasoline with and without the tax or with a low and a high rate of tax. Owing to the erratic behavior of gasoline prices in different localities, it is impossible to make a significant comparison between prices in different states at the same time. Consequently the only sensible price comparison lies between prices at a particular place before and after the increase. But of course a single comparison of that sort would have no meaning, and so statistical comparisons which comprehend all rate changes over a period of years have been attempted. However, what appears to be the best price figures are so inexact as to give unconvincing results. For example, a check of the *Commercial and Financial Chronicle's* weekly service station prices for 18 large cities indicates that, as shown in Table II, the changes in gasoline tax rates in 11 of these communities were not reflected at all in the prices quoted. Statistics published in the *New York Times* are equally unsatisfactory. Since no more adequate price statistics are available, the direct comparison of prices must be abandoned.

### B. Effect of Gasoline Tax Rate Changes on Consumption of Fuel

If there is no change in the amount of gasoline consumed as a result of a higher tax rate and consequent higher prices to consumers, it is unlikely that the producer of fuel will bear any part of the burden imposed by the tax. On the other hand, if the consumption is less, as a result of the higher price, the producer will in all probability bear some of the burden, either by assuming a part of the tax to avoid a decrease in consumption or by a decline in the

## Table II

### Comparisons of the Increases in the Gasoline Tax Rates with Increases or Decreases in the Gasoline Prices, Reported by the Commercial and Financial Chronicle, 1929*

| State | City | Increase in Gasoline Tax | | Changes in Price of Gasoline | | | |
|---|---|---|---|---|---|---|---|
| | | | | Increase | | Decrease | |
| | | Date | Amount | Date | Amount | Date | Amount |
| Colorado | Denver | 5/1 | 1 | | | 3/2 | 2 |
| Florida | Jacksonville | 7/1 | 1 | | | | |
| Georgia | Atlanta | 9/1 | 2 | | | 3/2 | 2 |
| Illinois | Chicago | 8/1 | 3 | | | 2/9 | 1 |
| Louisiana | New Orleans | 1/3 | 2 | 2/16 | 4 | 1/5 | 2 |
| Minnesota | Minneapolis | 5/1 | 1 | | | | |
| New York | New York City | 5/1 | 2 | | | 1/19-8/24 | 1-1 |
| New York | Buffalo | 5/1 | 2 | | | | |
| Ohio | Cincinnati | 4/17 | 1 | | | | |
| Pennsylvania | Philadelphia | 7/1 | 1 | 4/13 | 1 | | |
| Texas | Houston | 7/17 | 2 | | | 3/16 | 2 |
| Washington | Spokane | 7/1 | 1 | | | | |

*Read the table thus: In Louisiana at New Orleans on January 3 the tax on gasoline increased two cents. On February 16 the price of gasoline increased four cents and on January 5 the price decreased two cents.

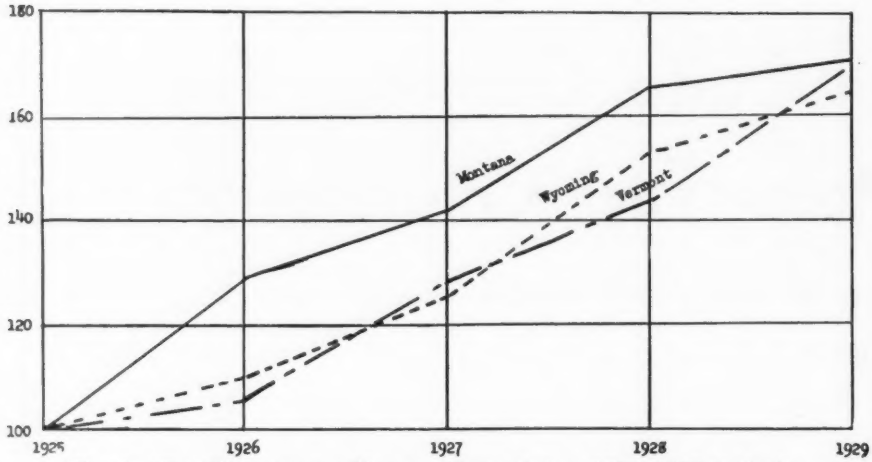



**Fig. 1—Gasoline consumption on three states, 1925-1929 inclusive. (Index: 1925 100)**

amount of fuel sold and resulting loss of profits. It should be emphasized that there is an actual increase in fuel consumption in nearly all states, but whether the rate of increase has been reduced as a result of the tax may be questioned.

If the increase was usually retarded after the imposition of a higher rate, it would indicate that the tax does have some effect on consumption. If the retardation occurred in states where gasoline tax rates were raised but not in others, the conclusion would be even more firmly established. If, also, it occurred in a more pronounced fashion where the raise was more than one cent than where it was only one, or where the resulting rate was high rather than low, the conclusions would obviously be confirmed. The following analysis represents an attempt to make statistical comparisons which will determine whether or not consumption tends to increase less rapidly the year after a raise in rate occurs.

### 1. The State by State Analysis

The consumption figures, designated those for the "United States," include statistics for 44 states and the District of Columbia; Illinois, Massachusetts, New Jersey, and New York are omitted for the reason that they did not impose taxes as early as 1925. The period investigated was 1925-1929 inclusive. Since published data are for full calendar-year periods, it is necessary to treat changes during the year as though they were made at the beginning or at the end or to omit them from consideration for the particular year.

It has seemed best, since traffic is concentrated in summer, to consider changes made from Jan. 1 to May 1 as if they were made Jan. 1 and those made from Sept. 1 to Dec. 31 as if made Jan. 1 of the following year. All changes made between May 1 and Sept. 1 are handled in the following manner: Half of the sum of the consumption for the year in which the change was made and the following year is compared with the total of the year previous to the change.

Rate changes made during 1926 (prior to Sept. 1) will not be considered, since the data for 1924 were not available, thus making it impossible to compare increases in consumption in 1926 with those for 1925. Changes made after May 1, 1929 will not be considered for similar reasons.

To make these comparisons it is necessary to make a case study of each change in each state and total the results to secure a composite picture of the findings. Table III shows how these studies were made. The table indicates that a change in the tax rate from 3 to 4 cents a gallon occurred April 17, 1929. This change is treated, for reasons already stated, as though it were made Jan. 1. The amount of gasoline consumed in 1929 was an increase of 80.7 million gallons over the amount consumed in 1928. This 80.7 was an *increase* over the amount of increase for 1928, which was 77.5 million gallons. However, the percentage increase was 9.7 per cent a *decrease* from the percentage increase for 1928 of 10.3 per cent.

The change for 1927 was made after May 1 of that year; therefore, half of the sum of the consumption for 1927 and 1928 is to be compared with that for 1926. It is obvious that half of the increase for 1927 and 1928 is not equal to the increase for 1926, either from the point of view of actual consumption increase or from that of the percentage increase. Thus, Ohio shows one case in which the rate of actual increase *increased* and one case in which it decreased. Also, in both cases the percentage increases showed decreases. All other states were considered in the same way.

## Table III

### Gasoline Consumption and Tax Rates in Ohio*

| Year | Tax Rate Changes Date | Rate | Consumption Amount** | Consumption Increases Actual** | Percentage |
|---|---|---|---|---|---|
| 1929 | 4/17 | 4 | 910.2 | 80.7 | 9.7 |
| 1928 | | 3 | 829.5 | 77.5 | 10.3 |
| 1927 | 5/25 | 3 | 752.0 | 89.2 | 13.5 |
| 1926 | | 2 | 662.8 | 212.3 | 47.1 |
| 1925 | 4/18 | 2 | 450.5 | | |

*United States Department of Agriculture, Bureau of Public Roads.
**Millions of gallons.

## Table IV

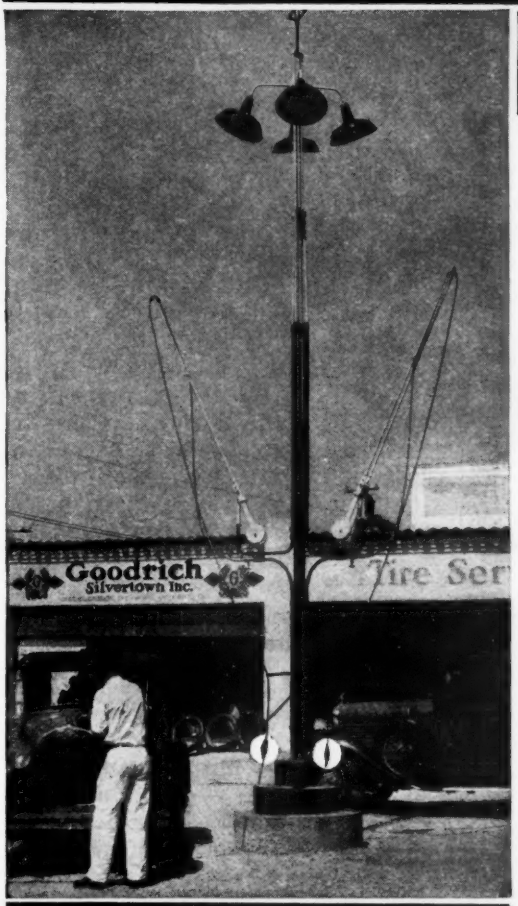
### Gasoline Consumption and Index Numbers for Three States*

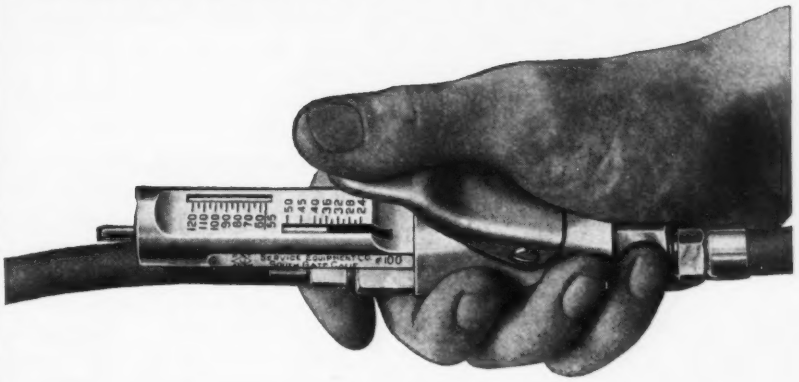
| Year | Montana Consumption** | Index | Vermont Consumption** | Index | Wyoming Consumption** | Index |
|---|---|---|---|---|---|---|
| 1929 | 57.5 | 171 | 44.0 | 170 | 34.2 | 165 |
| 1928 | 56.1 | 166 | 37.3 | 144 | 31.8 | 153 |
| 1927 | 47.9 | 142 | 33.2 | 128 | 25.9 | 125 |
| 1926 | 43.5 | 129 | 27.6 | 106 | 22.7 | 110 |
| 1925 | 33.7 | 100 | 25.9 | 100 | 20.7 | 100 |

*United States Department of Agriculture, Bureau of Public Roads.
**Millions of gallons.

# DIAMOND-U

## TIRE INFLATOR



**No other means of gauging and inflating tires matches the *performance* and *value* of this *business-getting, time-saving* equipment!**

THE DIAMOND-U TIRE INFLATOR is so definitely superior to other tire testing-inflating equipment that you positively cannot afford to be without one at the end of every air line...no matter how slow business may be right now.

If you operate a service station, Diamond-U Tire Inflators will strengthen your hold on old customers and bring you new ones. The guaranteed accuracy of the gauge assures maintenance of correct pressures. People know that this is vital to the life of balloon tires, and thousands go out of their way to patronize stations that supply such air service. Furthermore, Diamond-U Tire Inflators speed up tire testing-inflating amazingly; in time saved alone they commonly pay for themselves in less than a month!

If you are a tire dealer, you will not only save valuable time with Diamond-U equipment and send your tires out properly inflated, but by showing the Inflators to your customers, explaining their guaranteed accuracy, and emphasizing the necessity of keeping pressures pound-accurate you will protect and add to the good reputation of the tires you sell...which will be money in the cash register!

Approved and adopted by leading tire manufacturers, service station operators and fleet owners everywhere, Diamond-U Tire Inflators are rapidly replacing other equipment. Order yours NOW. The returns are big and immediate. The cost is mighty small...just $12.50, in the United States, for the complete unit with swivelled chuck, extra chuck nut and washers.

*Communicate with nearest office:* PHILADELPHIA, PA., Perry Bldg.—SPRINGFIELD, MASS., 1976 Main St.—CHICAGO, ILL., 205 W. Wacker Dr., Room 200—ST. PAUL, MINN., 514 N. Prior Ave.—KANSAS CITY, MO., 214 W. 21st St.

**SERVICE EQUIPMENT COMPANY, *Manufacturers***
**SOUTHGATE, CALIFORNIA**

Master Gauge *Accuracy*

Unlimited *Speed*

Positive
1-Point Indication

Arm's Length *Legibility*

Monkey Wrench
*Durability*

Dirt & Weather-Proof

Light Weight—12½ oz.

All for $12.50 Complete

The method of analysis may possibly be made clearer by a graphical illustration. Index numbers of consumption in Montana, Vermont, and Wyoming are shown in Table IV. Fig. 1 also pictures these same data. Each change must be studied separately.

In Montana the gasoline tax rate was raised on Jan. 1, 1927. In consumption there followed a *decrease* in the rate of increase. The other advance in gasoline tax rate occurred early in 1929, and again there is a *decrease* in the amount of increase.

Vermont presents the opposite situation: Gasoline tax rates were raised in 1927 and 1929, and both times the rate of increase in gasoline consumption *increased*.

Wyoming presents one case in which the consumption trend *increased*, that of the early 1927 change, and one in which it *decreased*, that of the 1929 change. These increases and decreases following tax changes are typical of those in the various other states, all of which were studied in the same manner.

There were 40 changes in the rates of the gasoline tax in the United States from 1925 to 1929 inclusive. Of these 40 changes, 23 showed that the actual amount of increase *decreased* following changes in the gasoline tax rate, while 17 changes showed an *increase*. Considering the same 40 changes from the standpoint of percentage increases there were 28 changes that resulted in a *decrease* and 11 changes that resulted in an increase in the percentage of increase. In one case there was no change in the percentage of increase.

Both of these comparisons tend to indicate that growth in gasoline consumption declines after a fuels tax increase. (The evidence would have been very much more convincing but for the fact that 1929 was a boom year reflecting an enormous increase in gas consumption all over the country.)

## Table VI

### The Effect on Consumption of Changes in the Tax Rate at High and Low Levels

| Rate | Actual Increase | | Percentage Increase | |
|---|---|---|---|---|
| | Increase in | Decrease in | Increase in | Decrease in |
| Two cents | | 2 | | 2 |
| Three cents | 7 | 7 | 7 | 7 |
| Four cents | 9 | 7 | 4 | 11 |
| Five cents | 1 | 7 | | 8 |

### 2. Comparison of Consumption Aggregates

Besides the above comparisons two other analyses were made. In the first rate-change comparisons of groups of states were studied. Alabama, Arizona, Arkansas, California, Delaware, Idaho, Iowa, Michigan, New Mexico, Rhode Island, and South Dakota, had no changes in gas tax rates from May 1, 1925, to Sept. 1, 1929, except during 1927 when each had a rate change.

Gas consumption in these states as a group is compared in Fig. 2 and Table V with that in the United States as a whole. This graph shows that consumption in the states where the rates changed only in 1927 did not increase as rapidly as in the United States as a whole. This becomes even more obvious in the next year, 1928, and tends to indicate that the consumption of gasoline is less after a fuels-tax-rate increase than it would have been had the tax remained the same.

Connecticut, Missouri, Nebraska, Oregon, Utah, Wisconsin, and the District of Columbia did not change their tax rates after 1926. The consumption trend in this group is compared in Fig. 2 with that of the United States as a whole and also with that of the states which made changes only in 1927. These seven states show a practically constant increase in consumption from 1926 to 1929 inclusive as compared with the retarded rate of increase for the United States in 1928. The retardation is even more evident in the group of states having changes only in 1927 (represented by the lower curve in the graph). These two comparisons seem to indicate that gasoline consumption is less after increase in tax than it would have been had the tax remained the same.

### 3. Result of Small and Large Change and of Level of Rate Resulting

Finally, an attempt is made to determine whether a rate change to 4 or 5 cents affects consumption more than 1 to 2 or 3 cents and whether an absolute change of a large amount affects consumption more clearly than does one of a smaller amount. Of the 40 changes in tax rates, as shown in Table VI, two resulted in a 2-cent rate, fourteen in a 3-cent rate, 16 in a 4-cent rate, and 8 in a 5-cent rate. Generally speaking, where the resulting rate was higher, the consumption increase declined more frequently whether measured in actual or in percentage terms. The general indication then is that the higher the rate after an increase in the severity of the tax the more likely there is to be consequent decline in the amount of consumption increase.

The other aspect of this question involves the relative effect of a small and a large change, a change of 0.5-cent or 1 cent compared with 2 cents. Table VII discloses that there is a tendency toward a greater number of decreases in consumption increase where the rate is high than where it is low. This is true, as shown in the table, whether the rate of increase be measured in absolute or in percentage terms.

## Table V

### Gasoline Consumption for Groups of States*

| Year | United States | | Group I | | Group II | |
|---|---|---|---|---|---|---|
| | Consumption** | Index | Consumption** | Index | Consumption** | Index |
| 1929 | 11,162.9 | 172.9 | 2,829.5 | 165.6 | 1,257.0 | 176.0 |
| 1928 | 9,714.2 | 150.4 | 2,448.9 | 143.3 | 1,131.9 | 158.5 |
| 1927 | 8,852.6 | 137.1 | 2,278.9 | 133.4 | 1,004.4 | 140.6 |
| 1926 | 7,883.9 | 122.1 | 2,019.1 | 118.2 | 893.4 | 125.1 |
| 1925 | 6,457.8 | 100.0 | 1,708.6 | 100.0 | 714.2 | 100.0 |

*Group I is the states that had changes in 1927 only. Group II is the states having no changes after 1926. Index means the index numbers for each year; these are used to plot Graph 2.
**In millions of gallons.

The conclusion then is that the greater the raise in tax rate the more likely it is to retard consumption.

### C. Conclusions

While the data analyzed are insufficient to justify a final decision as to whether the gasoline tax adversely affects the petroleum industry by reason of its inability to shift the entire burden to the motorist they do suggest the character of the answer which experience will ultimately provide. It has been shown that increase in consumption has declined after raises in the gasoline tax rates during the past five years more often than it has advanced, in spite of the fact that the year 1929, in the first part of which many of these changes occurred was a boom year.

It has also been demonstrated that the aggregate amount of retardation exceeds the amount of acceleration in so far as these can be isolated. And, finally, the unfavorable effect appears more pronounced if the rate is increased to a relatively high absolute level or if the amount of the change is great. Each of these conclusions tends to substantiate the others.

None of the data presented here tells whether the gasoline tax ultimately rests on the producer of fuel. Quite aside from the fact that the oil company affected may avoid payment of the tax by taking a loss through lowered sales, there is some reason to believe that any temporary adverse effect of the tax is more than offset by the favorable long-run influence of spending the fuels-tax revenues for roads, thereby tending to induce an increased demand for gasoline. Indeed this is suggested by the behavior of the curves in Graph 2 as noted above. The reasons for expecting such a long-run effect have not been analyzed statistically, but Prof. M. S. Kendrick of Cornell University (*American Economic Review*, June, 1930, pp. 226-230) has stated the case abstractly.

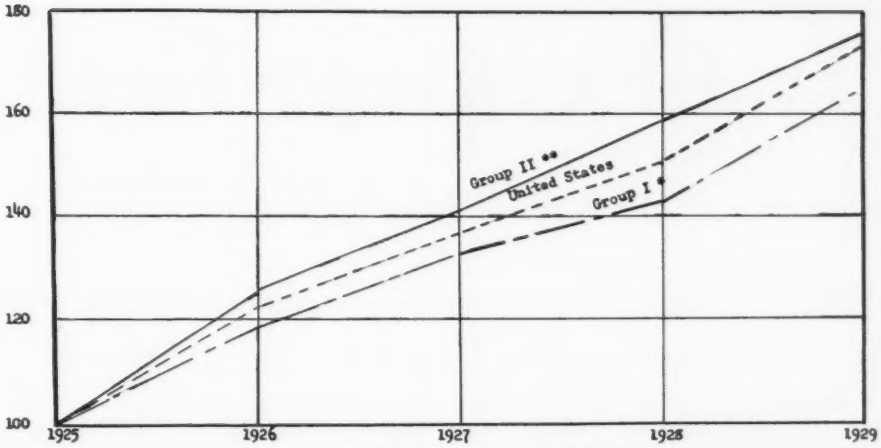



**Fig. 2—Consumption of gasoline in the United States and in two groups of states. (Index: 1925 100) *Group I are the states having changes in 1927 only. **Group II are the states having no changes after 1926**

## Santa Helps Business At Shell Stations

SAN FRANCISCO, Dec. 12.—Christmas displays at service stations of the Shell Oil Co. of California have proven so successful in increasing gallonage that the company plans again this year to decorate some of its stations for the holiday period.

A Santa Claus' workshop will be erected at a San Francisco and a Los Angeles station. Every department of that mysterious shop will be represented

There will be a post office where children may drop their letters telling Santa Claus what they want. All letters are acknowledged by the company, which tells the youthful yearners for sleds and dolls and engines that Santa Claus has received and recorded their orders.

Every child visiting the station is given a balloon and candy. Last year 250,000 balloons were given away and 14 tons of candy at the San Francisco station.

This year helium gas will be used in the balloons to guard against explosion. Heretofore hydrogen was used. The gas will come in five special tank cars.

These Christmas "round-ups," as the company calls them, are advertised through radio. Announcements begin the first of December and continue until after New Year's. Previously they were announced only during children's radio hours, but the displays appealed to grown-ups as well, so the announcements were shifted to the regular morning program of the company.

Last year's display at San Francisco increased gasoline sales 318 per cent, over the average monthly sales for that year, says E. H. Sanders, advertising manager. A record day's sales during the holiday period was 16,400 gallons. The average daily gallonage during November, 1928 at this station was about 775 gallons, whereas the average for November, 1929, was 1126 gallons, indicating, Mr. Sanders points out, a good portion of the new trade gained during the 1928 holiday period was retained.

A huge talking figure of Santa Claus, who spoke by means of a loud speaker was last year's display at the San Francisco station. A large order book lay on a table before him.

About 30 men will be required to build this year's display. Carpenters work from drawings prepared by a company artist.

## Table VII

### The Effect on Consumption of Changes in Tax Rates of Large and Small Amounts

| Increase | Actual Increase | | Percentage Increase | |
|---|---|---|---|---|
| | Increase in | Decrease in | Increase in | Decrease in |
| Two cents | 3 | 5 | 1 | 7 |
| One cent | 12 | 16 | 9 | 18 |
| One-half cent | 2 | 2 | 1 | 3 |

# Checking Tire Stocks

By E. L. Barringer
N. P. N. STAFF WRITER

## Ticket System Used by One Oil Company To Check Tires Through Dealers' Hands

**MILLER TIRE SALES CO.**

**Phone 1822** **Cape Girardeau, Missouri**

No.....

Kind ..... Ply.....

Size ..... Price $.....

Purchaser .....

Address .....

.....

**MILLER TIRE SALES CO.**

Date ..... No.....

Kind ..... Ply.....

Size ..... Price.....

Purchaser .....

Address .....

Received by .....

(Subject to terms and conditions appearing on back hereof.)

.....

Date ..... No.....

Kind ..... Ply.....

Size ..... Sale Price.....

..... Code.....

Consigned to.....

Town .....

Taken Out.....

Remarks:

Returned .....

Sold Date.....

Exchanged .....

**The ticket of the Miller Tire Sales Co. (Kelso Oil Co.) for routing tires. The top section remains with the dealer on delivery. The middle section is kept on file for the driver to check the dealer's stock and to collect on future deliveries. The bottom section goes to the accounting department on delivery of the goods. Original ticket is 5 by 8 inches, printed on cardboard**

CAPE GIRARDEAU, Mo. WHEN the oil jobber considers expansion of his business through sale of tires, batteries, and accessories he should not overlook his status as a jobber and the opportunities in jobbing as well as in retailing these extra lines. Such is the opinion of E. C. Smith, of the Kelso Oil Co., Cape Girardeau, Mo.

Mr. Smith has put into practice one phase of one-stop service jobbing by handling tires and accessories. He has set up the machinery, aside from his oil business, to handle this line of merchandise.

Increased numbers of gasoline outlets was seen by Mr. Smith as indicative of keener competition plus narrow margins. As he rents most of his stations to capable operators he permitted them to handle auto supplies other than gasoline, oil, and greases to increase their sales and their profits. While they continued to buy their petroleum products from the Kelso Oil Co. these operators were buying tires and accessories through jobbing houses.

The dealers were so successful in merchandising tires that the Kelso Oil Co. decided to job them. A satisfactory agreement was reached and the company took on the agency for the Miller tire along the Mississippi river south of St. Louis into Arkansas. Then the dealers were sold on handling the Miller brand and last June the company started in tires as the Miller Tire Sales Co.

Back of the oil company's main office in Cape Girardeau a separate building was erected as a tire and accessory warehouse. The building is brick, one story high. It has no windows, depending on roof ventilators and small openings near the ground for air circulation. This layout was used to keep out sunlight, and to maintain a

(*Continued on Page* 117)

# Crude Production by Fields

*By Telegraph—Daily average gross output, by fields in U. S., for week ending with dates below as compiled by A. P. I.*

## PRODUCTION SUMMARY

| | Dec. 13 | Dec. 6 |
|---|---|---|
| Production east of Rockies | 1,621,150 | 1,628,850 |
| Decrease | | 7,700 |
| Total production in U. S. | 2,232,850 | 2,229,250 |
| Increase | | 3,600 |
| Crude oil imports | 157,285 | 239,430 |
| Decrease | | 82,155 |
| Total new crude supply | 2,390,135 | 2,468,680 |
| Decrease | | 78,545 |

## OKLAHOMA

| | Dec. 13 | Dec. 6 |
|---|---|---|
| Allen Dome | 13,000 | 12,250 |
| Asher | 800 | 800 |
| Asher, West | 10,300 | 8,900 |
| Blackwell | 2,250 | 2,200 |
| Bowlegs | 13,450 | 13,000 |
| Braman | 1,950 | 1,900 |
| Bristow-Slick | 10,550 | 10,600 |
| Burbank | 12,900 | 13,000 |
| Carr City | 14,550 | 12,050 |
| Cromwell | 5,950 | 5,900 |
| Cushing | 12,000 | 12,050 |
| Davenport | 850 | 850 |
| Duncan District | 6,100 | 6,100 |
| Earlsboro | 17,900 | 13,950 |
| Earlsboro, East | 18,650 | 17,050 |
| Earlsboro, South | 8,750 | 7,950 |
| Fox | 800 | 800 |
| Garber | 4,350 | 4,350 |
| Graham | 2,500 | 2,500 |
| Healdton | 10,100 | 10,000 |
| Hewitt | 5,300 | 5,300 |
| Hubbard | 1,050 | 1,000 |
| Konawa | 15,750 | 11,000 |
| Little River | 23,250 | 23,500 |
| Little River, East | 10,350 | 11,250 |
| Logan County | 3,150 | 3,200 |
| Maud | 2,500 | 2,500 |
| Mission | 6,200 | 4,350 |
| Oklahoma City | 85,050 | 87,300 |
| Okmulgee, North | 8,000 | 8,000 |
| Okmulgee, South | 5,100 | 5,200 |
| Osage (Outside Burbank) | 22,850 | 23,150 |
| Papoose | 2,150 | 2,100 |
| Pearson | 550 | 450 |
| Sasakwa | 4,700 | 4,500 |
| St. Louis | 22,100 | 20,050 |
| Scholem-Alechem | 10,000 | 10,000 |
| Searight | 5,900 | 5,500 |
| Seminole | 14,100 | 12,900 |
| Seminole, East | 2,000 | 1,900 |
| Thomas | 400 | 400 |
| Tonkawa | 4,100 | 3,800 |
| Wewoka | 4,350 | 4,700 |
| Yale-Jennings | 5,050 | 5,150 |
| Others | 38,000 | 38,500 |
| Total, Okla. | 469,650 | 451,900 |
| Increase | | 17,750 |

## KANSAS

| | | |
|---|---|---|
| Augusta-Fox Bush | 2,500 | 2,500 |
| Churchill | 2,850 | 2,950 |
| El Dorado-Towanda | 12,700 | 12,700 |
| Florence-Covert | 700 | 750 |
| Greenwood Co. | 15,850 | 15,950 |
| Oxford | 2,100 | 2,100 |
| Peabody-Elbing | 2,100 | 2,150 |
| Rainbow Bend | 950 | 950 |
| Russell | 2,750 | 2,800 |
| Sedgwick Co. | 21,800 | 22,950 |
| Voshell | 13,150 | 13,300 |
| Others | 26,000 | 26,000 |
| Total, Kansas | 103,450 | 105,100 |
| Decrease | | 1,650 |

## NORTH LOUISIANA

| | | |
|---|---|---|
| Caddo, light | 8,500 | 8,450 |
| Caddo, heavy | 2,700 | 2,850 |
| Cotton Valley | 1,850 | 1,850 |
| De Soto and Red River | 2,800 | 2,750 |
| Haynesville | 5,300 | 5,200 |
| Holly | 900 | 950 |
| Homer | 3,300 | 3,350 |
| Sarepta Carterville | 2,100 | 2,150 |
| Urania | 5,250 | 5,300 |
| Zwolle | 9,500 | 9,650 |
| Others | 1,500 | 1,650 |
| Total, No. La. | 43,700 | 44,150 |
| Decrease | | 450 |

## ARKANSAS

| | | |
|---|---|---|
| Champagnolle | 3,500 | 3,400 |
| El Dorado | 3,950 | 3,900 |
| Lisbon | 850 | 900 |
| Nevada | 1,000 | 1,050 |
| Smackover, light | 4,750 | 4,800 |
| Smackover, heavy | 35,300 | 35,350 |
| Stephens | 900 | 900 |
| Others | 1,200 | 1,100 |
| Total, Ark. | 51,450 | 51,400 |
| Increase | | 50 |

## ROCKY MOUNTAIN

### Wyoming

| | | |
|---|---|---|
| Big Muddy | 2,000 | 2,000 |
| Elk Basin | 700 | 800 |
| Grass Creek | 2,150 | 2,000 |
| Labarge | 1,550 | 1,950 |
| Lance Creek | 200 | 200 |
| Lost Soldier | 4,400 | 4,350 |
| Oregon Basin | 3,350 | 3,200 |
| Rock River | 2,150 | 2,150 |
| Salt Creek | 28,800 | 29,400 |
| Others | 3,500 | 3,600 |
| Total, Wyo. | 48,800 | 49,650 |
| Decrease | | 850 |

### Montana

| | | |
|---|---|---|
| Cat Creek | 1,150 | 1,100 |
| Pondera | 1,650 | 1,650 |
| Sunburst | 4,050 | 4,100 |
| Others | 50 | 50 |
| Total, Mont. | 6,900 | 6,900 |

### Colorado

| | | |
|---|---|---|
| Florence | 500 | 400 |
| Fort Collins | 1,150 | 1,150 |
| Moffat (Craig) | 1,150 | 950 |
| Others | 1,500 | 1,500 |
| Total, Colo. | 4,300 | 4,000 |
| Increase | | 300 |

### New Mexico

| | | |
|---|---|---|
| Artesia | 650 | 750 |
| Bal. Eddy Co. | 150 | 200 |
| Hobbs High | 31,700 | 31,050 |
| Bal. Lea Co. | 7,350 | 7,400 |
| Hogback | 450 | 450 |
| Rattlesnake | 950 | 1,100 |
| Table Mesa | 100 | 100 |
| Total, N. M. | 41,350 | 41,050 |
| Increase | | 300 |
| Total, Rocky Mountain | 101,350 | 101,600 |
| Decrease | | 250 |

## TEXAS (OUTSIDE GULF COAST)

### Panhandle District

| | | |
|---|---|---|
| Carson Co. | 5,100 | 6,350 |
| Gray Co. | 53,750 | 54,200 |
| Hutchinson Co. | 13,200 | 15,200 |
| Wheeler Co. | 400 | 600 |
| Others | 300 | 300 |
| Total, Panhandle Texas | 72,750 | 76,650 |
| Decrease | | 3,900 |

### North Texas

| | | |
|---|---|---|
| Archer Co. | 12,300 | 12,400 |
| Burkburnett | 7,300 | 7,350 |
| Electra | 9,600 | 9,600 |
| Iowa Park and K. M. A. | 4,250 | 4,150 |
| Montague-Cooke | 8,500 | 8,550 |
| Wilbarger | 17,000 | 16,850 |
| Others | 1,600 | 1,650 |
| Total, North Texas | 60,550 | 60,550 |

### West Central Texas

| | | |
|---|---|---|
| Brown Co. | 4,250 | 4,500 |
| Callahan Co. | 1,800 | 1,800 |
| Coleman Co. | 2,050 | 2,050 |
| Eastland-Desdemona | 4,250 | 4,350 |
| Jack Co. | 1,550 | 1,550 |
| Palo Pinto Co. | 350 | 350 |
| Shackleford Co. | 4,300 | 4,500 |
| Stephens Co. | 4,650 | 4,650 |
| Throckmorton Co. | 600 | 600 |
| Young Co. | 14,050 | 14,400 |
| Others | 1,900 | 1,700 |
| Total, West Cent. Tex. | 39,750 | 40,450 |
| Decrease | | 700 |

### West Texas

| | | |
|---|---|---|
| Crane and Upton Co.'s | 33,500 | 37,500 |
| Crockett Co. | 1,950 | 1,950 |
| Ector Co. | 7,500 | 7,450 |
| Howard Co. | 18,350 | 24,450 |
| Jones Co. | 1,350 | 1,350 |
| Mitchell and Scurry Co.'s | 2,100 | 2,050 |
| Reagan Co. | 22,450 | 24,800 |
| Winkler Co. | 55,300 | 56,400 |
| Yates | 92,500 | 100,200 |
| Bal. Pecos Co. | 4,200 | 4,000 |
| Others | 6,800 | 6,000 |
| Total, West Tex. | 246,000 | 266,150 |
| Decrease | | 20,150 |

### East Central Texas

| | | |
|---|---|---|
| Boggy Creek | 2,400 | 2,600 |
| Corsicana-Powell | 5,250 | 5,300 |
| Currie | 350 | 300 |
| Mexia | 3,900 | 3,900 |
| Nigger Creek | 150 | 150 |
| Richland | 150 | 150 |
| Van Zandt | 26,900 | 27,700 |
| Wortham | 600 | 600 |
| Others | 200 | 200 |
| Total, East Cent. Tex. | 39,900 | 40,900 |
| Decrease | | 1,000 |

### Southwest Texas

| | | |
|---|---|---|
| Chapman Abbot | 5,500 | 6,100 |
| Dale | 300 | 250 |
| Darst Creek | 36,900 | 38,600 |
| Laredo Dist. | 14,250 | 14,750 |
| Luling | 9,900 | 9,650 |
| Lytton Spgs. | 750 | 700 |
| Salt Flat | 15,000 | 15,300 |
| Somerset | 1,300 | 1,300 |
| Others | 700 | 600 |
| Total, S. W. Texas | 84,600 | 87,250 |
| Decrease | | 2,650 |
| Total, Texas (Outside Gulf Coast) | 543,550 | 571,950 |
| Decrease | | 28,400 |

## GULF COAST

### Coastal Texas

| | | |
|---|---|---|
| Barbers Hill | 23,850 | 24,300 |
| Batson | 1,050 | 1,100 |
| Big Creek | 3,150 | 3,100 |
| Blue Ridge | 1,650 | 1,600 |
| Boling | 850 | 800 |
| Damon Mound | 650 | 700 |
| Esperson | 2,950 | 2,850 |
| Fannett | 550 | 600 |
| Goose Creek | 4,300 | 4,400 |
| Hankamar | 2,300 | 2,100 |
| Hull | 7,800 | 7,800 |
| Humble | 13,550 | 12,350 |
| North Dayton | 950 | 900 |
| Orchard | 2,000 | 2,000 |
| Orange Co. | 2,000 | 1,900 |
| Pettus | 8,550 | 8,400 |
| Pierce Junct. | 10,200 | 9,250 |
| Port Neches | 1,400 | 1,450 |
| Raccoon Bend | 8,550 | 8,700 |
| Refugio Co. | 29,600 | 27,500 |
| Saratoga | 1,150 | 1,200 |
| Somerville | 1,350 | 1,500 |
| Sour Lake | 1,900 | 2,100 |
| So. Liberty | 2,850 | 2,800 |
| Spindletop | 13,300 | 13,600 |
| Sugarland | 12,200 | 12,000 |
| W. Columbia | 4,950 | 4,800 |
| Others | 2,300 | 2,250 |
| Total, Coastal Texas | 165,900 | 162,050 |
| Increase | | 3,850 |

### Coastal Louisiana

| | | |
|---|---|---|
| Edgerly | 400 | 400 |
| Evangeline | 1,850 | 2,000 |
| Hackberry, East | 3,500 | 3,900 |
| Hackberry, Old | 900 | 900 |
| Lake Barre | 2,100 | 2,100 |
| Lockport | 4,100 | 4,300 |
| Port Barre | 2,100 | 2,250 |
| Sulphur Dome | 2,200 | 2,300 |
| Vinton | 5,200 | 5,300 |
| White Castle | 1,050 | 1,050 |
| Others | 3,400 | 3,500 |
| Total, Coastal La. | 26,800 | 28,000 |
| Decrease | | 1,200 |
| Total, Gulf Coast | 192,700 | 190,050 |
| Increase | | 2,650 |

## CALIFORNIA

| | | |
|---|---|---|
| Dominguez | 10,000 | 10,000 |
| Elwood-Goleta | 43,000 | 35,000 |
| Hutington Beach | 27,800 | 27,200 |
| Inglewood | 15,600 | 15,300 |
| Kettleman Hills | 23,200 | 26,500 |
| Long Beach | 99,600 | 94,700 |
| Midway-Sunset | 59,500 | 59,000 |
| Playa del Rey | 46,300 | 44,000 |
| Santa Fe Spgs. | 94,000 | 93,600 |
| Seal Beach | 17,300 | 17,800 |
| Ventura Ave. | 45,400 | 48,300 |
| Others | 130,000 | 129,000 |
| Total, Calif. | 611,700 | 600,400 |
| Increase | | 11,300 |

## EASTERN

| | | |
|---|---|---|
| (Not including Mich.) | 106,550 | 104,000 |
| Increase | | 2,550 |

## MICHIGAN

| | | |
|---|---|---|
| Mt. Pleasant | 6,550 | 6,500 |
| Muskegon | 2,100 | 2,100 |
| Saginaw | 100 | 100 |
| Total, Mich. | 8,750 | 8,700 |
| Increase | | 50 |

# Compilation Of Mid-Continent Refinery Operations

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## Mid-Continent Refinery Operations, Week Ended Dec. 12 (By Telegraph)

| | Kansas | Oklahoma | North & Cent. Texas | West Texas | North La.-Ark. | Total Week Ended Dec. 12 |
|---|---|---|---|---|---|---|
| Plants Reporting | 12 | 29 | 25 | 15 | 12 | 93 |
| Da. Av. Cap. (Bbls.) | 94,500 | 161,700 | 106,100 | 82,000 | 77,000 | 521,300 |
| Da. Cracking Capacity | 30,700 | 52,600 | 17,200 | 5,000 | 22,700 | 128,200 |
| Da. Av. Crude Runs | 52,056 + 23.8 | 104,881 + 7.0 | 67,885 + 6.1 | 28,862 + 8.5 | 32,397 — 3.2 | 286,081 + 8.3 |
| Da. Av. Other Oils | 4,195 — 39.9 | 3,856 +216.8 | 3,606 + 27.9 | 6,604 + 47.7 | 14,521 — 3.9 | 32,782 + 7.1 |
| **GASOLINE—Gallons** | | | | | | |
| Stocks, Dec. 5 | 18,529,000 | 40,036,000 | 29,681,000 | 11,184,000 | 8,672,000 | 108,102,000 |
| Prod. 12-5 to 12-12 | 10,109,000 + 22.2 | 17,792,000 + 11.1 | 10,555,000 + 4.0 | 3,985,000 + 9.3 | 4,745,000 — 0.3 | 47,186,000 +10.2 |
| Ship. 12-5 to 12-12 | 9,403,000 + 25.1 | 16,668,000 + 22.2 | 7,210,000 — 27.2 | 2,904,000 — 33.8 | 4,886,000 — 9.6 | 41,071,000 + 0.5 |
| Stocks, Dec. 12 | 19,235,000 + 3.8 | 41,160,000 + 2.8 | 33,026,000 + 11.3 | 12,265,000 + 9.6 | 8,531,000 — 1.6 | 114,217,000 + 5.7 |
| Ratio Sales to Prod. | 93.0% | 93.7% | 68.3% | 72.9% | 103.0% | 87.0% |
| **KEROSINE—Gallons** | | | | | | |
| Stocks, Dec. 5 | 10,471,000 | 13,933,000 | 1,948,000 | 15,000 | 236,000 | 26,603,000 |
| Prod. 12-5 to 12-12 | 1,708,000 + 14.9 | 2,255,000 + 18.3 | 1,173,000 + 16.4 | 32,000 + 23.1 | 184,000 — 17.1 | 5,352,000 + 15.1 |
| Ship. 12-5 to 12-12 | 1,457,000 + 31.4 | 1,762,000 + 3.8 | 1,286,000 + 3.3 | 19,000 — 29.6 | 100,000 — 75.2 | 4,624,000 + 3.2 |
| Stocks, Dec. 12 | 10,722,000 + 2.4 | 14,426,000 + 3.5 | 1,835,000 — 5.8 | 28,000 + 86.7 | 320,000 + 35.6 | 27,331,000 + 2.7 |
| Ratio Sales to Prod. | 85.3% | 78.1% | 109.6% | 59.4% | 54.3% | 86.4% |
| **STOVE DISTILLATE—Gallons** | | | | | | |
| Stocks, Dec. 5 | 4,007,000 | 6,809,000 | 825,000 | 100,000 | 388,000 | 12,129,000 |
| Prod. 12-5 to 12-12 | 793,000 +200.4 | 1,644,000 + 36.0 | 432,000 + 29.7 | 27,000 — 61.4 | 155,000 +384.4 | 3,051,000 + 59.9 |
| Ship. 12-5 to 12-12 | ..... | 1,433,000 — 43.2 | 471,000 — 17.1 | 37,000 + 12.1 | 55,000 +129.2 | 1,996,000 — 46.1 |
| Stocks, Dec. 12 | 4,800,000 + 19.8 | 7,020,000 + 3.1 | 786,000 — 4.7 | 90,000 — 10.0 | 488,000 + 25.8 | 13,184,000 + 8.7 |
| Ratio Sales to Prod. | ..... | 87.2% | 109.0% | 137.0% | 35.5% | 65.4% |
| **GAS OIL—Gallons** | | | | | | |
| Stocks, Dec. 5 | 3,086,000 | 37,274,000 | 3,298,000 | 5,660,000 | 7,789,000 | 57,107,000 |
| Prod. 12-5 to 12-12 | 620,000 — 14.1 | 1,268,000 — 47.4 | 840,000 + 20.0 | 472,000 — 1.7 | 2,138,000 — 3.5 | 5,338,000 — 18.2 |
| Ship. 12-5 to 12-12 | 636,000 + 22.0 | 2,476,000 + 18.0 | 1,384,000 + 87.8 | 526,000 + 40.6 | 2,778,000 + 65.4 | 7,800,000 + 36.7 |
| Stocks, Dec. 12 | 3,070,000 — 0.5 | 36,066,000 — 3.2 | 2,754,000 — 16.5 | 5,606,000 — 1.0 | 7,149,000 — 9.2 | 54,645,000 — 4.3 |
| Ratio Sales to Prod. | 102.6% | 195.3% | 164.8% | 111.4% | 129.9% | 146.1% |
| **FUEL OIL—Gallons** | | | | | | |
| Stocks, Dec. 5 | 25,406,000 | 49,544,000 | 71,233,000 | 16,912,000 | 15,389,000 | 178,484,000 |
| Prod. 12-5 to 12-12 | 3,732,000 + 16.6 | 7,270,000 + 23.6 | 7,170,000 — 9.4 | 3,915,000 + 12.9 | 4,028,000 — 8.4 | 26,115,000 + 5.1 |
| Ship. 12-5 to 12-12 | 4,797,000 + 7.1 | 5,032,000 — 1.9 | 9,256,000 + 45.9 | 4,855,000 — 7.8 | 4,094,000 — 17.8 | 28,034,000 — 7.0 |
| Stocks, Dec. 12 | 24,341,000 — 4.2 | 51,782,000 + 4.5 | 69,147,000 — 2.9 | 15,972,000 — 5.6 | 15,323,000 — 0.4 | 176,565,000 — 1.1 |
| Ratio Sales to Prod. | 128.5% | 69.2% | 129.1% | 124.0% | 101.6% | 107.3% |

## Gasoline Produced by Various Methods, Week Ended December 12

| | Kansas | % of Total | Oklahoma | % of Total | North & Cent. Texas | % of Total | West Texas | % of Total | Louisiana-Arkansas | % of Total | Total | % of Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Straight Run | 6,360,000 | 62.9 | 11,436,000 | 64.3 | 7,026,000 | 66.6 | 3,501,000 | 87.9 | 821 000 | 17.3 | 29,144,000 | 61.8 |
| Cracked | 3,070,000 | 30.4 | 4,925,000 | 27.7 | 2,253,000 | 21.3 | 312,000 | 7.8 | 3,039 000 | 64.0 | 13,599,000 | 28.8 |
| Natural | 679,000 | 6.7 | 1,431,000 | 8.0 | 1,276,000 | 12.1 | 172,000 | 4.3 | 885,000 | 18.7 | 4,443,000 | 9.4 |
| Total | 10,109.000 | | 17,792,000 | | 10,555,000 | | 3,985,000 | | 4,745,000 | | 47,186,000 | |

+ or — columns are % changed over previous week

## Mid-Continent Refiners Increase Crude Runs

Staff Special—By Telegraph
TULSA, Dec. 16

MID-CONTINENT refiners that report their operating statistics weekly to NATIONAL PETROLEUM NEWS, increased runs of crude oil to stills 13,000 barrels daily average in the week ended Dec. 12.

Gasoline production was 4,300,000 gallons more than in the preceding week. Shipments were 200,000 larger. Stocks rose 6,100,000 gallons, with Louisiana-Arkansas the only district that drew on stocks.

Kerosine stocks increased 700,000 gallons, although shipments were larger than in the preceding week.

Distillate production was stepped up almost two thirds but stocks rose when shipments were little more than half the volume of shipments the week before.

Gas oil stocks were cut 2,400,000

### Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Dec. 12. Change in stocks figures from Nov. 14.

**GASOLINE**

| | Gallons |
|---|---|
| Production | 185,558,000 |
| Shipments | 168,186,000 |
| Net change in stocks | +17,372,000 |
| Ratio sales to production | 90.6% |

**KEROSINE**

| | Gallons |
|---|---|
| Production | 20,950,000 |
| Shipments | 18,238,000 |
| Net change in stocks | +2,712,000 |
| Ratio sales to production | 87.1% |

**STOVE DISTILLATE**

| | Gallons |
|---|---|
| Production | 10,417,000 |
| Shipments | 8,622,000 |
| Net change in stocks | +1,795,000 |
| Ratio sales to production | 82.8% |

**GAS OIL**

| | Gallons |
|---|---|
| Production | 23,346,000 |
| Shipments | 25,924,000 |
| Net change in stocks | —2,578,000 |
| Ratio sales to production | 111.0% |

**FUEL OIL**

| | Gallons |
|---|---|
| Production | 103,404,000 |
| Shipments | 111,896,000 |
| Net change in stocks | —8,492,000 |
| Ratio sales to production | 108.2% |

gallons when output was lowered and demand increased.

Fuel oil stocks were lowered 1,900,000 gallons.

## "Gas" Pump Manufacturers Form Organization

CINCINNATI, Dec. 13.—Manufacturers of gasoline pumps have formed an organization to consider and study their mutual problems. Thirteen companies were represented at an organization meeting in Granville, O., Sept. 25. In November an executive secretary was selected, and temporary headquarters opened in 4205 Carew Tower, Cincinnati. The organization is named the Gasoline Pump Manufacturers' Association.

Companies represented at the organization meetings are the American Oil Pump & Tank Co., Aqua Systems, S. F. Bowser & Co., Correct Measure Co., Dayton Pump & Mfg. Co., Erie Meter Systems, Martin & Schwartz, Milwaukee Tank Works, National Pumps Corp., Pennsylvania Pump Co., Service Station Equipment Co., Sharpsville Boiler Works, and the Wayne Co.

The temporary board of governors is G. F. Mattman, vice-president, American Oil Pump & Tank Co., president; N. A. Carlson, vice-president, Erie Meter Systems, vice-president; Ralph Heaton, Cincinnati, executive secretary; A. F. John, trustee, Milwaukee Tank Works, treasurer; J. P. Hanna, president, National Pumps Corp.; D. S. Johnson, assistant to the president, S. F. Bowser & Co.; and S. F. Frensdorf, vice-president, Service Station Equipment Co.

Formal invitations will be mailed shortly to all pump manufacturers as a check on the informal announcement of the Granville meeting.

## Charles C. Prinz Dies In Louisville

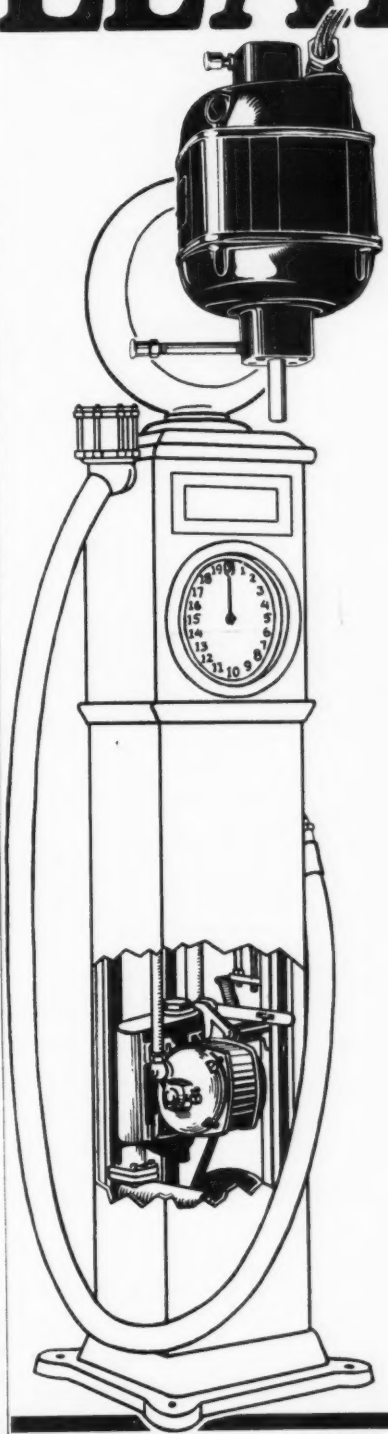
LOUISVILLE, Dec. 12.—Charles C. Prinz, district manager for the Gulf Refining Co., died at his home here Dec. 9. Mr. Prinz, 46 years old, had been ill for several weeks.

He was appointed district manager for Gulf in November 1914, and is credited with building the company's business until it is the second largest marketer in Kentucky now.

Mr. Prinz is survived by his widow Mrs. Minnie Hoferkamp Prinz, three daughters, two sons, his mother, two brothers and a sister. Funeral services were held Dec. 11.

A resolution of regret, and sympathy to the family, was adopted by the Kentucky Petroleum Marketers Association and the Kentucky subcommittee on the Code.


LEADERS from the beginning



From the date of the first appearance of a power driven gasoline dispensing pump, Leland vapor resisting motors have been the choice of the majority of gasoline dispensing system manufacturers.

In 1930, approximately 200,000 motor driven gasoline dispensing pumps will be manufactured. The fact that more of these pumps will be powered by Lelands than any other make of motor is a tribute to the superior construction and more efficient operation of Leland motors.

*Full information on vapor resisting motors will be supplied upon request.*

A. C. Single Phase
D. C. Compound Wound
A. C. Polyphase
All in interchangeable Frames.

The Leland Electric Co.
Dayton · Ohio · U.S.A

Leland fractional horsepower motors

PETROLEUM JELLY . . . a familiar friend in every household . . . is the same sticky salve that makes motor oils thick and sluggish in winter.

The great Sinclair refineries, with modern refrigerators and separators, remove this paralyzing petroleum jelly from Sinclair Opaline at as low as 60° F. below zero. (Opaline is guaranteed to flow at zero.) With Opaline your customers are not forced to change to "light" motor oils for easy starting in winter!

Opaline is refined from paraffin base crudes according to the Sinclair Law of Lubrication. (Write for booklet explaining this famous Sinclair Law . . . it's a sensational sales builder you shouldn't overlook!)

This is the story and above is the girl who'll carry it into millions of homes from coast to coast. Cash in on the sweeping Opaline sales.

* * *

*Send a post card to our nearest office and a Sinclair salesman will tell you all about it. Sinclair Refining Company (Inc.), New York, Atlanta, Chicago, Fort Worth, Houston, Kansas City. Sinclair Refining Company of Canada, Ltd., Toronto. Sinclair Refining Company of California, Los Angeles.*

SINCLAIR OPALINE

REG. U. S. PAT. OFF.

MOTOR OIL

# Refinery - Tank Wagon Markets

## Refined Oil Markets Generally Quiet As Pre-Inventory Lull Sets In

CLEVELAND, Dec. 16

ACTIVITY continued pretty much at a standstill in domestic refined oil markets last week. Export markets quieted down somewhat, but foreign demand still was proportionately better for the season than domestic demand. Price movements were mixed.

The Pennsylvania market could be said to have put up the best front of any of the domestic refinery markets. Prices of several commodities in this market made substantial gains over the levels prevailing the previous week. And, except for bright stock, the balance of the Pennsylvania refined oil list remained steady. Bright stock was quoted 0.5-cent to 1 cent a gallon lower. Inventories of most commodities were reported as being in better shape than they have been for some time past.

Gasoline prices moved down in all Mid-Continent markets and the Chicago resale market reflected this situation. Prices of most commodities also were lower in domestic markets on the west coast. The pre-inventory lull was blamed for the light jobbing demand in markets west of the Mississippi.

The eastern seaboard markets were fairly steady. The delivered tank car price for gasoline was 0.25-cent lower at 7.25 cents in the Boston district, but elsewhere along the seaboard there were no changes from the previous week's quotations.

Inquiries in the cargo markets at the Gulf and on the west coast diminished slightly in volume, but they still were fairly numerous. Two important cargo transactions were reported closed during the week. An east coast consumer-buyer purchased approximately 113,000 barrels of U. S. Motor gasoline at a price slightly under 5.625 cents, delivered New York harbor. After forcing Gulf prices for gasoline and kerosine down 0.125 to 0.25-cent, a French buyer closed with a Roumanian refiner at still lower prices.

Standard Oil Co. of New Jersey reduced its posted prices for diesel oil 15 cents a barrel at all of its terminal points along the eastern seaboard. Distress offerings of bunker oil were said to have been eliminated and the minimum price for Grade C advanced 4 cents a barrel at the Gulf. Gas oil prices were lower.

There was little change in quotations made by California refiners for cargo lots of gasoline. Prices at which business has been placed recently were substantially lower, however.

## Quiet Prevails in Chicago Market

Staff Special

CHICAGO, Dec. 13

THE Chicago resale market was practically featureless during the week ended Dec. 13, with buyers of all commodities sitting back and taking little interest in the market. The mild weather which has prevailed over the middle west during the past week was reflected in the demand for low cold test fuel and furnace oils, while the demand for gasoline was showing the usual pre-inventory period lull.

Most of the Chicago trade apparently were making little effort to push the sale of spot gasolines, figuring that jobbers generally were not going to buy much more goods than they actually needed until the first of the year. Most of the carlot marketers were doing their buying on a hand-to-mouth basis, preferring to wait until they had an order before trying to make a purchase. Several "short" sales on gasoline for shipment over a period were reported, while on the other hand a number of sellers refused to take business other than for prompt shipment, unless the selling price was equal to or higher than the low of the prevailing spot market.

Considerable interest was shown in contracts offered to jobbers for 1931. Most of the refiners said they were offering the same contract for next year as they did this year, namely, the average of prices shown in three trade publications with a guaranteed margin under the general tank wagon or service station price. A number of contracts were reported based on the low or the average price in some daily publication, date of shipment.

Prices on U. S. Motor gasoline offered by Chicago sellers ranged from 4 to 5.25 cents, but most of the sales reported were at 4.125 to 4.50 cents. North and West Texas continued to be the source of most of the gasoline moving at the lower prices, although a little of the 4-cent gasoline originated in Oklahoma.

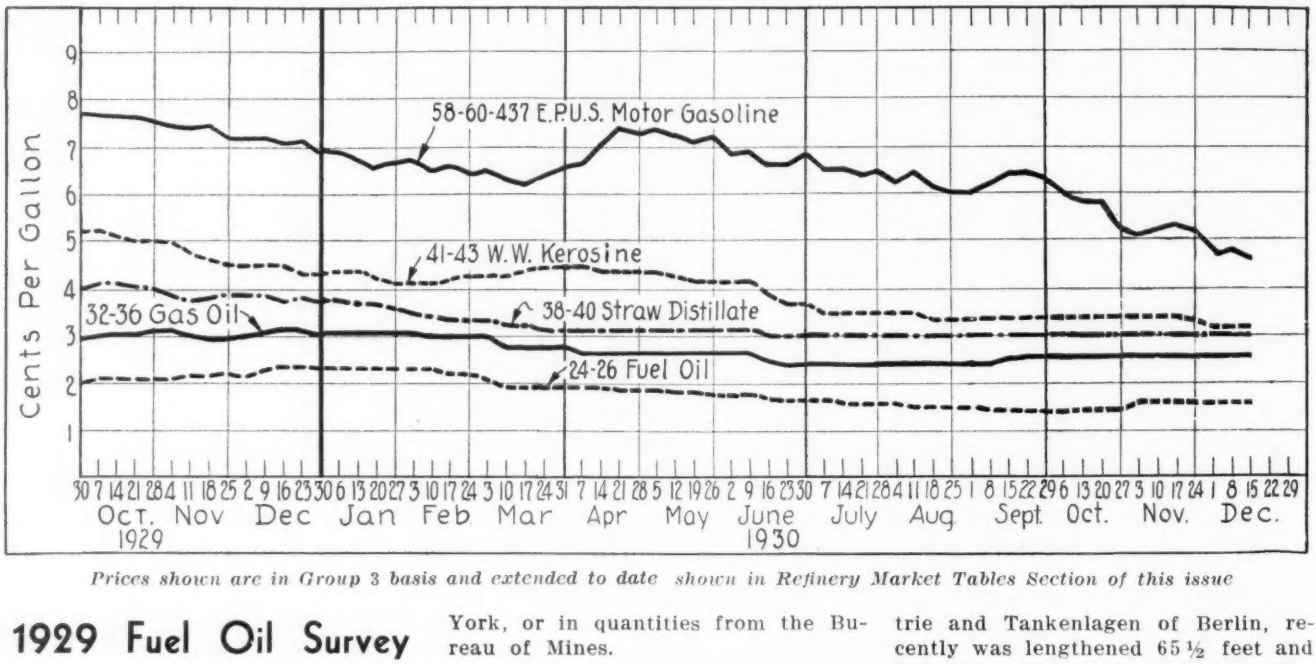
One or two Chicago marketers said they had bought a little U. S. Motor gasoline for resale at 3.75 cents. However, most of them said that 3.875 cents was the lowest at which they could buy full specification gasoline and that, especially in Oklahoma, a price of at least 4 cents represented the cost of the bulk of purchases made during the week.

The demand for the higher gravity gasolines and for anti-knock gasolines also showed a decline last week, although it was proportionately better than for the U. S. Motor.

Mild weather was blamed by most sellers for the lack of demand for the zero burning oils. Although prices of dark gas oils were lower in a number of quarters last week, most sellers said this was only a temporary condition and a little demand would serve to hold them up as there was no over supply of the better grades. Demand from industrial concerns was light. Prices of gas and fuel oils were lower.

Much cloudiness with occasional periods of precipitation are likely next week over the Standard of Indiana territory. Temperatures generally will remain close to normal.

## Current Prices of Principal Mid-Continent Refined Products


Cents Per Gallon
58-60-437 E.P.U.S. Motor Gasoline
41-43 W.W. Kerosine
32-36 Gas Oil
38-40 Straw Distillate
24-26 Fuel Oil
Oct. Nov Dec Jan Feb Mar Apr May June July Aug. Sept. Oct. Nov. Dec.
1929
1930

*Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue*

## 1929 Fuel Oil Survey Published by A.P.I.

CLEVELAND, Dec. 15.—In order to make the facts available earlier than would be possible otherwise the American Petroleum Institute has published the annual "National Survey of Fuel Oil Distribution—1929." The survey was made by E. B. Swanson, chief economist of the U. S. Bureau of Mines.

The survey discloses a domestic fuel oil distribution in 1929 of 369,584,661 barrels against 353,231,875 barrels in 1928. Total distribution for 1929 was 408,735,493 barrels against 397,660,095 barrels in 1928.

Increased consumption was indicated in the use of fuel oil for heating buildings, by railroads, for generating electricity, at refineries and in ships. Deliveries of bunker oil to ships retained first place as the largest item of demand. The Pacific Coast again led regional distribution, and California led the states.

Copies of the 30-page booklet are available from the American Petroleum Institute, 250 Park Ave., New York, or in quantities from the Bureau of Mines.

**Oklahoma Marketers Meet in January**

OKLAHOMA CITY, Okla.—The Oklahoma Petroleum Marketers Association will meet on Jan. 23 and 24 at the Huckins Hotel, Oklahoma City, according to Mrs. Vinnie Chaney, acting secretary.

LONDON—The German motor tanker Malkah of the Naptha Industrie and Tankenlagen of Berlin, recently was lengthened 65½ feet and 400 tons added to its capacity. The vessel was cut in two and a new section inserted. Trials proved the job to be satisfactory.

**12th Meeting for S. Dakota Jobbers**

MADISON, S. D.—The twelfth annual convention of the South Dakota Independent Oil Men's Association will be held Jan. 27 and 28 at the Alonzo Ward Hotel, Aberdeen, S. D., according to F. H. Buehler, secretary.

## Shipments From Southern California

LOS ANGELES, Dec. 11

Shipments of bulk petroleum from Southern California ports to foreign and Atlantic Seaboard ports for week ended Dec. 6 totaled 869,683 barrels—the lowest weekly shipments this year—as compared with 1,419,956 barrels shipped to the same ports for the previous week. Destination and quantity of shipments were as follows:

| Destination | Crude | Gasoline | Diesel | Kerosine | Gas-Oil | Fuel | Total |
|---|---|---|---|---|---|---|---|
| Pacific For. | 182,825 | 101,609 | 4,000 | 8,991 | ..... | 292,875 | 590,300 |
| Atlantic Dom. | ..... | 181,939 | 11,654 | 80,000 | ..... | ..... | 273,593 |
| Atlantic For. | ..... | ..... | ..... | ..... | ..... | 5,790 | 5,790 |

Total shipment from these ports during November was 9,544,976 barrels, a decrease of 28,742 barrels under October. The shipments were distributed as follows:

| Destination | Crude | Gasoline | Kerosine | Diesel | Batching Oil | Fuel | Total |
|---|---|---|---|---|---|---|---|
| Pacific Dom. | 1,243,470 | 1,248,113 | 7,872 | 194,908 | ..... | 1,821,557 | 4,515,920 |
| Pacific For. | 509,970 | 357,422 | 75,470 | 207,605 | 27,602 | 1,315,155 | 2,493,224 |
| Atlantic Dom. | ..... | 1,316,915 | 174,322 | 406,779 | ..... | ..... | 1,898,016 |
| Atlantic For. | ..... | 635,762 | ..... | 2,054 | ..... | ..... | 637,815 |

### *Prices 10 Years Ago*
***Dec. 13, 1920***

| | Oklahoma | Penna. |
|---|---|---|
| 58-60 U. S. Motor..... | 18.75-19.25c | 22.75-23.50c |
| 80-84 Natural ..... | 20.00-21.00c | ..... |
| Kerosine (42-43 Okla.; 47 w. w. Pa.) ..... | 8.50-9.00c | 13.50-13.75c |
| Fuel Oil (24-26 Okla.; 36-40 Pa.) ..... | $1.80-$1.90 | 7.50-8.50c |
| Crude (Okla. 35-35.9) | $3.50 | $6.10 |
| Chicago tank wagon (no state tax)..... | | 27.00c |

### *Prices A Year Ago*
***Dec. 16, 1929***

| | Oklahoma | Penna. |
|---|---|---|
| 58-60 U. S. Motor..... | 7.1204c | 8.00-9.00c |
| Grade A Natural ..... | 6.625c | ..... |
| Kerosine (Okla. 41-43; Pa. 47 w. w.).... | 4.25-4.75c | 6.75-7.25c |
| Fuel Oil (Okla. 24-26; Pa. 36-40)..... | $0.95-$1.00 | 4.50-5.00c |
| Crude (Okla. 35-35.9) | $1.40 | $3.05 |
| Chicago tank wagon (including 3c tax)..... | | 17.00c |

# Mid-Continent Refinery Markets

## Demand Quiet as Inventory Period Sets In

Staff Special
TULSA, Dec. 13

THE annual inventory problem had its effect on the Mid-Continent refinery market the second week of December. At the half way mark of the month buyers were not particularly interested in buying at any price, desiring to hold down inventories, and some sellers were anxious to sell in order to reduce inventories before the first of the year. The result was a week of very little activity of interest.

Gasoline prices lost some ground in all districts. Kansas refiners while in a comparatively good position statistically, faced stiff competition from adjoining districts and in some instances were forced to meet this competition in order to hold accounts. Prices from Kansas refiners on a Group 3 freight basis ranged from 4.25 cents up for 58-60 U. S. Motor. The situation with reference to shipments within the state was somewhat better, prices ranging from 4.75 cents up, in a few instances sales as high as 5.50 cents having been reported.

Several refiners in Oklahoma continued to quote 58-60 U. S. Motor at 5 to 5.25 cents, with other grades in line with those prices, but reported little spot business. A majority of them said their gasolines were moving strictly on contract, and that the netback on the contracts was from 0.25 to 0.50 cent under those quotations.

Several refiners selling the bulk of their output in the spot market, reported sales of U. S. Motor at 4.25 cents and up, with an occasional car at 4.125 cents. The price range for 58-60, 437 e.p. gasoline, was 4.125 to 4.75 cents, with an occasional sale into competitive territory at 4 cents.

North Texas refiners, particularly those around Wichita Falls, quoted from 4.25 cents up for their gasoline but business was reported slow. The refiners in the Panhandle district sold their gasoline at 4 cents and up direct to the trade, with reports of a few cars having been moved early in the week at 3.75 cents for resale.

Arkansas refiners reduced their quotations for U. S. Motor for shipment into differential territory to 4.75 cents a gallon, and the north Louisiana refiners followed with reductions to 5 cents a gallon. The quotations on a Group 3 basis for shipment outside the differential territory ranged from 4.25 to 4.75 cents.

Natural gasolines lost more ground the first part of the week but were quiet at unchanged prices the latter half. Three or four companies early in the week had varying amounts of gasoline on hand which they desired to move before the end of the month. Demand was not sufficiently good to absorb this material at quotations of 3.75 to 4 cents, and one or two large buyers were offered the material at 3.50 cents. The gasoline was soon moved, however, and while the sales established the low for grade AA at 3.50 cents, they relieved an otherwise burdensome situation. The lower grades moved down in sympathy with grade AA.

Kerosines remained quiet as far as Oklahoma refiners were concerned. The Texas refiners reported they had little of the oil on hand and had very few inquiries. Kansas refiners reported only a fair amount of business. The situation in Arkansas and Louisiana, was brighter, with only one or two refiners making the oil. These plants supplied other refiners and the demand as a whole was sufficient to keep the small production moving well.

Heating distillates and zero gas oils improved in demand as colder weather settled over the middle west. Several refiners reported sizable increases in takings on contracts, while a few who had some oils available for shipment on spot orders, reported a noticeable increase in inquiries. The ordinary grades of gas oil, however, were comparatively quiet. Prices generally were unchanged. Zero fuel oils were comparatively scarce, and demand was equal to supply. Several refiners received from 5 to 10 cents per barrel premium for the zero grades.

Bright stock demand remained light in the Mid-Continent. Competition was stiff, and prices for several grades were 1 cent lower Dec. 13. Even at the lower prices, orders were reported scarce.

Neutral oil prices were generally unchanged. The zero cold test grades were comparatively scarce, and with demand good, the few refiners making them said they were behind on shipments.

Wax demand was quiet and white crude scale was offered under 2 cents a pound. The prevailing quotations Dec. 13 were 1.75 to 2 cents a pound. Two or three refiners sold their output some time ago at 2 cents, and will be out of the market for the next month or two.

### Burford Has New Division Manager

TULSA—George B. Davies, who has been Ohio representative for the Burford Oil Co. here, has been appointed division sales manager in the northwest, in charge of the company's Minneapolis sales office.

Previous to his joining the Burford company a year ago, Mr. Davies was sales manager for the Refiners Oil Sales Co., Dayton, O., and previous to that, sales manager for the Louisiana Oil Refining Corp., Shreveport, according to F. W. Burford, president of the Burford company.

## Financing Reports False, Asserts Deterding

NEW YORK, Dec. 13.—Sir Henri W. A. Deterding, managing director of the Royal Dutch Co., is quoted in a cablegram from Amsterdam that reports the company would float a new issue of bonds, are false. He is quoted as telling an extraordinary meeting of stockholders that the company has ample liquid cash.

"There is no reason whatever for any fear as to the financial results for this year," Sir Henri said. He repeated that the company is in every respect fit for the coming difficulties, stating that its "financial condition and earning capacity are splendid and can be compared with those of any other leading oil company." He said Royal Dutch-Shell subsidiaries have held back expenditures for expansion which was not immediately necessary.

"We remain optimistic on the future of the oil industry," Sir Henri said. "The permanent stockholder in Royal Dutch has always profited over the past 40 years and we have every confidence that he will in the coming years.

"It has always been the policy of Royal Dutch-Shell to write off vast amounts. The losses in Russia were immediately written off 100 per cent. Enormous stocks of oil of the affiliated companies appear in the annual balance sheets at cost or market value, whichever is lower. This will benefit shareholders as soon as the present oil situation changes for the better."

## Richfield's Deferred Dividend Omitted

LOS ANGELES, Dec. 13.—Richfield Oil Co. has omitted the quarterly dividend of 43¾ cents a share on its $25 par 7 per cent preferred stock, due Feb. 1. Omission is to enable the company to conserve cash, it was announced. The company has outstanding 399,900 shares of this stock.

# Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect December 15

| | *Price F.O.B. Group 3* | | *Price F.O.B. Point of Origin* | | *If for Particular Destination* |
|---|---|---|---|---|---|
| Oklahoma | 4.2500 | (Wt. Avg.) | 4.2500 | (Wt. Avg.) | ..... |
| **Oklahoma | 4.00 –4.75 | ..... | 4.00 –4.75 | ..... | ..... |
| Kansas | 4.25 –4.75 | ..... | ..... | ..... | S. O. Neb. & Indiana Territory, etc. |
| Kansas | ..... | ..... | 5.5000 | (Wt. Avg.) | Kansas only. |
| North Texas | 4.00 –4.50 | ..... | 4.00 –4.50 | ..... | ..... |
| West Texas | 4.00 –4.50 | ..... | 4.00 –4.50 | ..... | ..... |
| Louisiana-Arkansas | 4.25 –4.75 | ..... | ..... | ..... | Michigan, Ohio and Indiana. |
| Louisiana-Arkansas | ..... | ..... | 4.75 –5.00 | ..... | State or differential haul. |
| Indiana-Illinois | 4.125–4.75 | ..... | ..... * | ..... | S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only. |

*Shipments made from E. Chicago, Ind., and Wood River, Ill., according to conditions and freight rates; no prices F.O.B. point of origin can be given.

**Price of this 58-60, 437 e.p. gasoline, which in most instances meets full U. S. Motor gasoline specifications, represents quotations and sales prices of four refiners having 7% of the refining capacity of Oklahoma. These four refiners are not reporting their prices for use in compiling weighted averages on U. S. Motor gasoline.

**Note:** No sales reported for the gasoline marked "see note"; prices shown represent majority of quotations only.

# Chicago Resale Market

CHICAGO, Dec. 13

THE Chicago market was featureless last week. Buyers of all commodities showed little interest in the market. Mild weather held down demand for furnace oils, while gasoline demand remained quiet. Spot prices for U. S. Motor moved down about 0.125 cent with the bulk of sales Dec. 13 at 4.125 to 4.50 cents. Prices of dark gas oil and heavy fuel oil were lower. High gravity fuel oils were unchanged in price.

**Following prices represent majority of sales made on Group 3 freight basis, although shipments may originate in other refining districts, such as North and West Texas, Arkansas, Louisiana, Indiana, Illinois, Kentucky, etc.**

| | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| 58-60 U. S. Motor, 437 e.p. | 4.125– 4.50 | 4.25 – 4.625 | 4.375– 4.75 |
| †56-62 400-437 e.p. anti-knock gasoline | 4.75 – 6.00 | 5.00 – 6.25 | 5.00 – 6.25 |
| 60-62 437 e.p. gasoline | 4.25 – 4.625 | 4.25 – 4.625 | 4.50 – 4.75 |
| 60-62 400 e.p. gasoline | 4.375– 4.75 | 4.375– 4.75 | 4.625– 5.00 |
| 64-66 375 e.p. gasoline | 5.25 – 5.75 | 5.25 – 5.75 | 5.50 – 5.75 |
| 68-70 350-360 e.p. gasoline | 5.75 – 6.25 | 5.75 – 6.25 | 6.00 – 6.50 |
| *Domestic Aviation Gasoline | 7.25 – 7.50 | 7.25 – 7.50 | 7.50 – 7.75 |
| 41-43 w.w. kerosine | 3.00 – 3.25 | 3.00 – 3.25 | 3.00 – 3.25 |
| 42-44 w.w. kerosine | 3.25 – 3.50 | 3.25 – 3.50 | 3.25 – 3.625 |
| 38-40 straw distillate | 2.75 – 3.00 | 2.75 – 3.00 | 2.875– 3.00 |
| 32-36 ordinary dark gas oil | 2.125– 2.25 | 2.25 – 2.375 | 2.25 – 2.375 |
| 32-36 dark zero gas oil | 2.50 – 2.75 | 2.625– 2.75 | 2.625– 2.75 |
| 32-36 straw zero gas oil | 2.75 – 2.875 | 2.75 – 2.875 | 2.75 – 2.875 |
| 28-30 zero fuel oil (per bbl.) | $0.85 –$0.90 | $0.85 –$0.90 | $0.85 –$0.90 |
| 28-30 fuel oil (per bbl.) | $0.80 –$0.85 | $0.80 –$0.85 | $0.80 –$0.85 |
| 24-26 fuel oil (per bbl.) | $0.60 –$0.65 | $0.60 –$0.65 | $0.60 –$0.65 |
| 18-22 fuel oil, low sulfur (per bbl.) | $0.50 –$0.55 | $0.50 –$0.55 | $0.50 –$0.55 |
| 18-22 fuel oil, high sulfur zero (per bbl.) | $0.525–$0.60 | $0.525–$0.60 | $0.525–$0.60 |
| 14-16 fuel oil (per bbl.) | $0.40 –$0.45 | $0.425–$0.475 | $0.425–$0.475 |

*Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% recovery at 221°; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

†Over 45% benzol equivalent. Prices represent quotations and sales.

# Weighted Average Prices

**OKLAHOMA**

| | Dec. 15 | | Dec. 8 | | Dec. 1 | |
|---|---|---|---|---|---|---|
| | No. of Cars | Price | No. of Cars | Price | No. of Cars | Price |
| 58-60 U. S. Motor, 437 e.p. | 2 | 4.2500 | .. | 4.375–5.00 (See note) | .. | 4.50 –5.00 (See note) |
| *58-60 437 e.p. gasoline | .. | 4.00–4.75 | .. | 4.25 –4.75 | .. | 4.375–4.875 |
| 60-62 437 e.p. gasoline | .. | 4.25–5.00 (See note) | .. | 4.625–5.25 (See note) | 2 | 4.6250 |
| 60-62 400 e.p. gasoline | 1 | 5.5000 | .. | 5.25 –5.50 (See note) | .. | 5.25 –5.50 (See note) |
| 64-66 375 e.p. gasoline | .. | 5.50–5.75 (See note) | .. | 5.50 –6.25 (See note) | .. | 5.50 –6.25 (See note) |

**KANSAS**

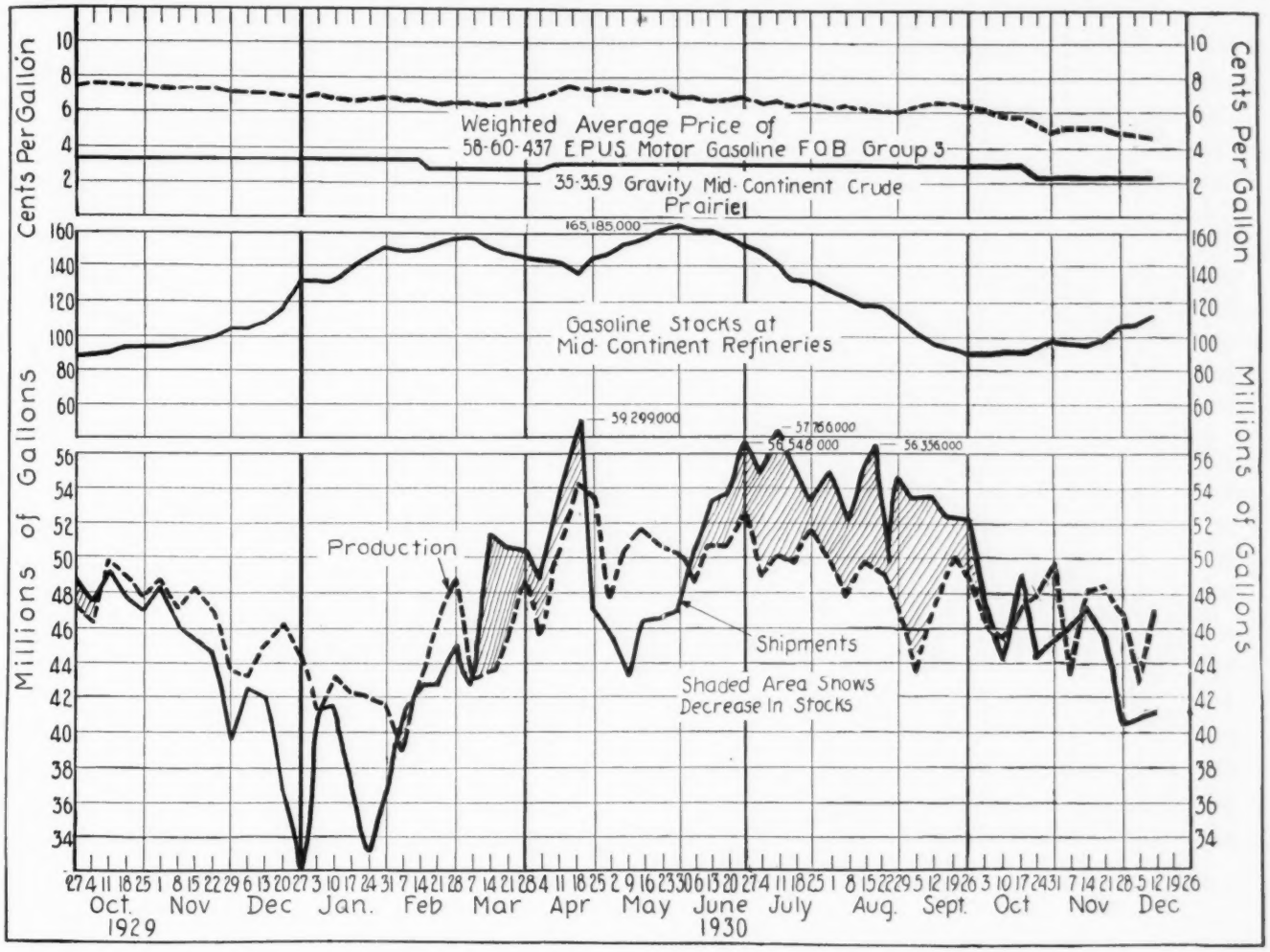
| | Dec. 15 | | Dec. 8 | | Dec. 1 | |
|---|---|---|---|---|---|---|
| | No. of cars | Price | No. of cars | Price | No. of Cars | Price |
| 58-60 U. S. Motor, 437 e.p. | 2 | 5.5000 | 3 | 5.7500 | 15 | 5.6000 |

**Note:** No sales reported for the gasoline marked "see note" on the dates so marked; prices shown on such dates represent majority of quotations only.

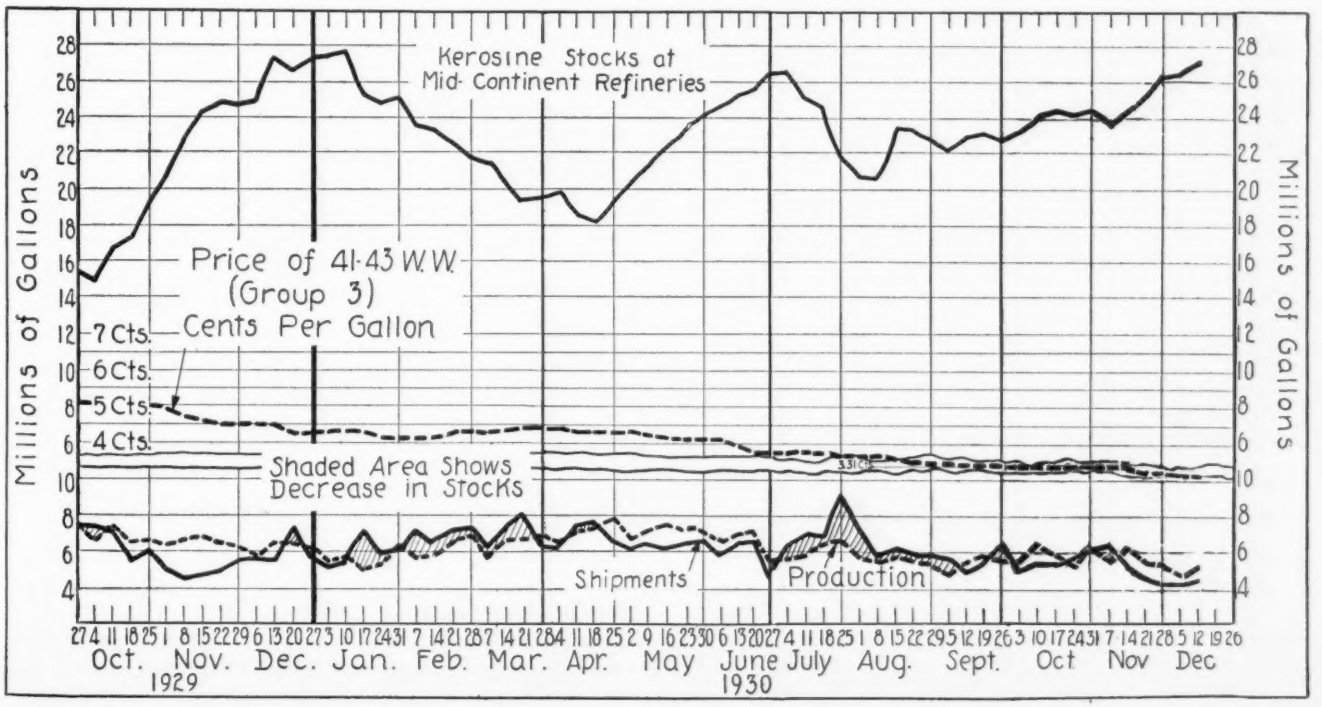
*Prices of this 58-60, 437 e. p. gasoline, which in most instances meets full U. S. Motor gasoline specifications, represents quotations and sales prices of four refiners having 7% of the refining capacity of Oklahoma. These four refiners are not reporting their prices for use in compiling weighted averages on U. S. Motor gasoline.

# Barometer of Mid-Continent Refinery Market—Week Ending December 12

*Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News*




***Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 90***



# Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

*(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)*

## GASOLINE AND NAPHTHA

**OKLAHOMA** (F. o. b. Oklahoma refineries)

| | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| 48-50 450 e.p. naphtha... | 4.00 | 4.75 | 4.75 |
| 50-52 450 e.p. naphtha... | 4.00 | 4.75 | 4.75 |
| 56-58 450 e.p. gasoline... | 4.00 – 4.25 | 4.375– 4.625 | 4.50 – 4.75 |
| 58-60 450 e.p. gasoline... | 4.00 – 4.25 | 4.375– 4.625 | 4.50 – 4.75 |
| 64-66 390 e.p. gasoline... | 5.25 – 5.50 | 5.50 – 5.75 | 5.50 – 5.75 |
| 68-70 350-360 e.p. gasoline | 5.75 – 6.25 | 6.00 – 6.25 | 6.00 – 6.25 |
| ‡Domestic Aviation Gasoline..... | 7.00 – 8.00 | 7.00 – 8.00 | 7.00 – 8.00 |

‡Prices based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167°F., and not less than 122° F.; 50% rec. at 221°; 90% at 311°; 96% at 347°; end point, 374°F. Fighting grade in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

**PENNSYLVANIA** (F. o. b. Western Pennsylvania refineries)

| | | | |
|---|---|---|---|
| 52-54 Naphtha..... | 6.25 – 6.50 | 6.25 – 6.50 | 6.00 – 6.50 |
| 54-56 Naphtha..... | 6.25 – 6.75 | 6.25 – 6.75 | 6.25 – 7.00 |
| 58-60 U.S. Motor 437 e.p. | 6.50 – 6.75 | 6.50 – 6.75 | 6.50 – 6.75 |
| 60-62 400-410 e.p. gasoline | 6.50 – 7.00 | 6.50 – 7.00 | 6.50 – 7.00 |
| 64-66 390 e.p. gasoline.... | 7.00 – 7.50 | 7.125– 7.50 | 7.125– 7.75 |
| 68-70 350-360 e p..... | 8.00 – 8.75 | 8.00 – 8.75 | 8.00 – 8.75 |

**OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)**

| | | | |
|---|---|---|---|
| **U. S. Motor Gasoline** | | | |
| Ohio, delivery at any point..... | 8.50 | 9.00 | 9.00 |

**KANSAS** (F. o. b. refinery Kansas destination)

| | | | |
|---|---|---|---|
| 60-62 437 e.p. gasoline.... | 5.00 – 5.50 | 5.50 – 5.75 | 5.50 – 5.75 |
| 60-62 400 e.p. gasoline.... | 5.50 – 5.75 | 5.75 – 6.00 | 5.75 – 6.25 |
| 64-66 375 e.p. gasoline.... | 6.00 – 6.50 | 6.25 – 6.50 | 6.50 |

**NORTH TEXAS** (F. o. b. North Texas refineries)

| | | | |
|---|---|---|---|
| 56-58 450 e.p. gasoline.... | 3.75 | 4.00 | 4.25 |
| 58-60 450 e.p. gasoline.... | 3.75 | 4.00 | 4.25 |
| 58-60 U.S. Motor 437 e.p. | 4.00 – 4.50 | 4.125– 4.625 | 4.375– 4.75 |
| 60-62 400 e.p. gasoline.... | 4.25 – 4.75 | 4.75 – 5.00 | 5.00 |
| 64-66 390 e.p. gasoline.... | 5.00 – 5.25 | 5.00 – 5.25 | 5.25 |
| 64-66 375 e.p. gasoline.... | 5.25 – 5.50 | 5.375– 5.50 | 5.50 |
| 68-70 350-360 e.p. gasoline | 5.75 – 6.00 | 5.75 – 6.00 | 6.00 |

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

| | | | |
|---|---|---|---|
| 50-52 naphtha..... | 3.75 | 4.00 | 4.25 |
| 58-60 437 e.p. gasoline.... | 3.75 | 4.00 | 4.25 |
| 58-60 U.S. Motor 437 e.p. gasoline..... | 4.00 – 4.50 | 4.125– 4.50 | 4.375– 4.625 |

**NORTH LOUISIANA** (N. La., Ark. and Miss. destination)

| | | | |
|---|---|---|---|
| 58-60 U.S. Motor 437 e.p | 5.00 | 5.50 | 5.50 |

**ARKANSAS** (Ark., N. La. and Miss. destination)

| | | | |
|---|---|---|---|
| 58-60 U.S. Motor 437 e.p. | 4.75 | 5.25 | 5.25 |

**CALIFORNIA** (3c tax to be added to California gasoline prices if used in state.)

| | | | |
|---|---|---|---|
| 54-58 U.S. Motor 437 e.p. | 7.25 –10.25 | 7.75 –10.50 | 8.00 –11.00 |
| 54-58 U.S. Motor, for outside state shipment.... | 7.00 – 8.25 | 7.25 – 8.50 | 7.50 – 8.50 |
| 58-61 375-400 e.p. gasoline | 11.00 –12.00 | 11.00 –12.00 | 11.00 –12.00 |
| 42-45 Engine Distillate 445-480 e.p..... | 7.00 – 8.00 | 7.50 – 8.75 | 8.00 – 9.00 |

## NATURAL GASOLINE

(Note: End point of all grades, not over 375F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

**OKLAHOMA** (F. o. b. Oklahoma refineries)

| | | | |
|---|---|---|---|
| Grade AA, 80-87.9, 90% Recovery..... | 3.25 – 3.50 | 3.75 | 4.00 – 4.25 |
| Grade A, 72-79.9, 90% Recovery..... | 3.75 | 4.125 | 4.25 – 4.50 |
| Grade BB, 84-92, 85% Recovery..... | 3.25 | 3.625– 3.75 | 3.75 – 4.00 |
| Grade B, 76-83.9, 85% Recovery..... | 3.25 – 3.375 | 3.625– 3.75 | 4.00 – 4.125 |
| Grade C, 80-92, 78% Recovery..... | 3.25 | 3.625– 3.75 | 3.75 – 4.00 |

**NORTH TEXAS** (F. o. b. Breckenridge)

| | | | |
|---|---|---|---|
| Grade AA, 80-87.9, 90% Recovery..... | 3.25 – 3.50 | 3.75 | 4.00 – 4.25 |
| Grade A, 72-79.9, 90% Recovery..... | 3.75 | 4.125 | 4.25 – 4.50 |
| Grade BB, 84-92, 85% Recovery..... | 3.25 | 3.625– 3.75 | 3.75 – 4.00 |
| Grade B, 76-83.9, 85% Recovery..... | 3.25 – 3.375 | 3.625– 3.75 | 4.00 – 4.125 |
| Grade C, 80-92, 78% Recovery..... | 3.25 | 3.625– 3.75 | 3.75 – 4.00 |

**NORTH LOUISIANA** (F. o. b. Monroe District)

| | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| Grade AA..... | †3.50 | †4.00 | †4.25 |
| Grade BB..... | †3.375 | †3.75– 4.00 | †4.00 |
| Grade C..... | †3.375 | †3.75– 4.00 | †4.00 |

**CALIFORNIA** (F. o. b. California refineries)

| | | | |
|---|---|---|---|
| 75-85, 375-390 e.p. for blending..... | 5.75 – 6.75 | 6.00 – 7.00 | 6.00 – 7.00 |

## BURNING OILS

**PENNSYLVANIA** (F. o. b. Western Pennsylvania refineries)

| | | | |
|---|---|---|---|
| 45 w. w. kerosine..... | 5.00 – 5.25 | 4.75 – 5.00 | 4.75 – 5.00 |
| 46 w.w. kerosine..... | 5.25 – 5.50 | 5.125– 5.50 | 5.00 – 5.50 |
| 47 w. w. kerosine..... | 5.375– 5.75 | 5.375– 5.75 | 5.25 – 5.75 |
| 300 mineral seal..... | 5.25 – 6.00 | 5.50 – 6.00 | 5.50 – 6.00 |

**OKLAHOMA** (F. o. b. Oklahoma refineries)

| | | | |
|---|---|---|---|
| 41-43 w. w. kerosine..... | 3.00 – 3.25 | 3.00 – 3.25 | 3.125– 3.25 |
| 42-44 w. w. kerosine..... | 3.25 – 3.50 | 3.25 – 3.50 | 3.25 – 3.50 |

**KANSAS** (F. o. b. refinery Kansas destination)

| | | | |
|---|---|---|---|
| 41-43 w. w. kerosine..... | 3.50 – 4.00 | 3.50 – 4.00 | 3.50 – 4.00 |
| 42-44 w. w. kerosine..... | 4.25 – 4.50 | 4.25 – 4.50 | 4.25 – 4.50 |

**NORTH TEXAS** (F. o. b. North Texas refineries)

| | | | |
|---|---|---|---|
| 40-42 w. w. kerosine..... | 3.00 | 3.00 | 3.00 |
| 41-43 w. w. kerosine..... | 3.00 – 3.25 | 3.00 – 3.25 | 3.00 – 3.25 |

**NORTH LOUISIANA** (N. La., Ark. and Miss. destination)

| | | | |
|---|---|---|---|
| 41-43 w. w. kerosine..... | 4.00 | 4.00 | 4.00 |
| 42-44 w. w. kerosine..... | 4.25 | 4.25 | 4.25 |

**ARKANSAS** (Ark., N. La. and Miss. destination)

| | | | |
|---|---|---|---|
| 41-43 w. w. kerosine..... | 4.00 | 4.00 | 4.00 |

**CALIFORNIA** (F. o. b. California refineries)

| | | | |
|---|---|---|---|
| 38-40 w. w. kerosine..... | 5.00 – 6.00 | 5.00 – 6.00 | 5.00 – 6.00 |

## NEUTRAL OIL

**PENNSYLVANIA** (F. o. b. Western Pennsylvania refineries)

| Vis. | | (Viscosity at 70° F.) | |
|---|---|---|---|
| 200 No. 3 Assoc. Filt..... | 17.00 –17.50 | 17.00 | 16.75 –18.00 |
| 180 No. 3 Assoc. Filt..... | 14.50 –15.00 | 14.00 –15.00 | 14.00 –15.00 |
| 150 No. 3 Assoc. Filt..... | 10.75 –11.00 | 11.00 | 10.50 –12.00 |

**Note:** Low cold test neutral oils are quoted approximately 6c per gal. higher than prices shown above, beginning Dec. 8.

| | | (Non Viscous) | |
|---|---|---|---|
| 34 Grav. 330-340 Flash... | 5.50 – 6.50 | 5.50 – 6.50 | 5.50 – 6.50 |

****MID-CONTINENT** (F. o. b. Mid-Continent refineries)

| Vis. Color | | (Viscosity at 100° F.) | |
|---|---|---|---|
| 100—No. 2..... | 5.50 | 5.50 | 5.50 |
| 150—No. 3..... | 6.75 – 7.00 | 6.75 – 7.00 | 6.75 – 7.00 |
| 150—No. 4..... | 6.50 | 6.50 | 6.50 |
| 180—No. 3..... | 8.00 – 8.50 | 8.00 – 8.50 | 8.00 – 8.50 |
| 180—No. 4..... | 7.75 – 8.00 | 7.75 – 8.00 | 7.75 – 8.00 |
| 180—No. 5..... | 7.50 | 7.50 | 7.50 |
| 200—No. 3..... | 9.75 –10.00 | 9.75 –10.00 | 9.75 –10.00 |
| 200—No. 4..... | 9.25 – 9.50 | 9.25 – 9.50 | 9.25 – 9.50 |
| 200—No. 5..... | 8.75 – 9.00 | 8.75 – 9.00 | 8.75 – 9.00 |
| 220—No. 3..... | 11.50 | 11.50 | 11.50 |
| 220—No. 4..... | 11.00 | 11.00 | 11.00 |
| 220—No. 5..... | 10.00 | 10.00 | 10.00 |
| 240—No. 3..... | 13.50 | 13.50 | 13.50 |
| 240—No. 4..... | 12.50 | 12.50 | 12.50 |
| 240—No. 5..... | 11.50 | 11.50 | 11.50 |
| 280—No. 3..... | 15.50 | 15.50 | 15.50 |
| 280—No. 4..... | 14.50 | 14.50 | 14.50 |
| 280—No. 5..... | 13.50 | 13.50 | 13.50 |

**†Prices nominal ††Only one refiner quoting *Quotations only**

****Represents Both Sales and Quotations.**

# Refinery Markets Wax, Lubricants, Heavy Oil

**Prices given below are in cents per gallon, except where $ is shown. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.**

***(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)***

**GULF COASTAL** (F. o. b. Gulf Coastal refineries)

| Vis. Color | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| | (Viscosity at 100° F., pour test 0) | | |
| 100—No. 2 Pale | 5.50 – 6.25 | 6.00 – 6.25 | 6.00 – 6.25 |
| 200—No. 3 Pale | 8.00 – 8.50 | 8.00 – 8.50 | 8.00 – 8.50 |
| 300—No. 3 Pale | 9.00 – 9.75 | 9.25 – 9.75 | 9.25 – 9.75 |
| 500—No. 3½ Pale | 10.00 –11.00 | 10.50 –11.00 | 10.50 –11.00 |
| 750—No. 4 Pale | 12.00 –12.50 | 12.00 –12.50 | 12.00 –12.50 |
| 1200—No. 4 Pale | 14.50 –15.00 | 14.50 –15.00 | 14.50 –15.00 |
| 2000—No. 4-5 Pale | 15.50 –16.00 | 15.50 –16.00 | 15.50 –16.00 |
| 200—No. 5½ Red Oil | 7.25 – 7.75 | 7.25 – 7.75 | 7.25 – 7.75 |
| 300—No. 5½ Red Oil | 8.25 – 9.00 | 8.50 – 9.00 | 8.50 – 9.00 |
| 500—No. 6 Red Oil | 9.25 –10.25 | 9.75 –10.25 | 9.75 –10.25 |
| 750—No. 6 Red Oil | 11.25 –11.75 | 11.25 –11.75 | 11.25 –11.75 |
| 1200—No. 5-6 Red Oil | 13.50 –14.00 | 13.50 –14.00 | 13.50 –14.00 |
| 2000—No. 6 Plus Red Oil | 15.50 –16.00 | 15.50 –16.00 | 15.50 –16.00 |

**‡CALIFORNIA** (F. o. b. California refineries)

| Vis. Color | (Viscosity at 100° F.) | | |
|---|---|---|---|
| 100—No. 3 | 9.50 –10.00 | 9.50 –10.00 | 9.50 –10.00 |
| 200—No. 3 | 11.50 | 11.50 | 11.50 |
| 300—No. 3 | 13.00 | 13.00 | 13.00 |
| 450—No. 3 | 15.50 | 15.50 | 15.50 |
| 550—No. 3 | 16.50 | 16.50 | 16.50 |
| 600—No. 3 | 17.00 | 17.00 | 17.00 |
| 200—No. 5 | 11.00 | 11.00 | 11.00 |
| 300—No. 5 | 12.00 | 12.00 | 12.00 |
| 400—No. 5 | 14.00 | 14.00 | 14.00 |
| 500—No. 5 | 15.00 | 15.00 | 15.00 |
| 600—No. 5 | 16.00 | 16.00 | 16.00 |
| 700—No. 7 | 18.00 | 18.00 | 18.00 |

‡Neutral oils not manufactured commercially in California.

## CYLINDER STOCKS

**MID-CONTINENT** (F. o. b. Mid-Continent refineries)

**(Bright stock prices represent quotations to domestic jobbers only).**

| | | | |
|---|---|---|---|
| 190-200 Vis. D at 210° Brt. St. | 25.00 | 25.00 | 25.00 |
| 150-160 Vis. D at 210° Brt. St., 0-10 cold test | 19.00 –21.00 | 20.00 –21.00 | 20.00 –21.00 |
| 150-160 Vis. D at 210° Brt. St., 10-25 cold test | 18.00 –20.00 | 19.00 –20.00 | 19.00 –20.00 |
| 150-160 Vis. D Brt. Stock, 25-40 cold test | 17.00 –18.00 | 17.00 –19.00 | 17.00 –19.00 |
| 150-160 Vis. E 210° Brt. St. | 16.00 –17.00 | 16.00 –17.00 | 16.00 –17.00 |
| 600 St. Ref. Olive Green | 7.50 – 8.00 | 7.50 – 8.00 | 7.50 – 8.00 |
| 600 St. Ref. Dark Green | 6.00 – 8.00 | 7.50 – 8.00 | 7.50 – 8.00 |
| Black Oil | 5.00 | 5.00 | 5.00 |

**PENNSYLVANIA** (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

| | | | |
|---|---|---|---|
| 600 Steam Refined, filterable | 8.75 – 9.00 | 8.75 – 9.00 | 8.75 – 9.25 |
| 650 Steam Refined | 13.50 –14.50 | 13.50 –15.00 | 13.75 –15.00 |
| 600 Flash | 15.00 –16.00 | 15.50 –16.00 | 16.00 –16.50 |
| 630 Flash | 22.00 –24.00 | 23.00 –25.00 | 24.00 –25.00 |
| 600 Warren E | 15.00 –15.50 | 15.00 –15.50 | 15.00 –16.00 |
| 600 Oil City E | 14.00 –14.50 | 14.00 –14.50 | 14.50 –15.00 |
| 600 D Filtered | †17.00 –18.00 | †17.00 –18.00 | 18.00 –19.00 |
| Cold Test Stock, 140-150 vis. at 210°, 540-550 flash, No. 8 color, below ‡25 pour test | 19.00 –21.50 | 20.00 –23.00 | 20.00 –23.50 |
| No. 8 color, 25-35 pour test | 17.75 –19.00 | 18.00 –19.50 | ..... |
| No. 8 color, above 35 pour test | 16.75 –17.50 | 17.50 –18.00 | 18.00 –20.00 |
| No. 6-6½ color diluted, 40-50 pour test | †16.50 –17.00 | †17.00 –20.00 | †17.00 –20.00 |

‡Changed to below 25 p.t. Dec. 8. Formerly below 35 p.t.

## WAX

**PENNSYLVANIA** (Per pound, F o b New York)

| | | | |
|---|---|---|---|
| 122-124 white crude scale a.m.p. | 2.375 | 2.375 | 2.25 – 2.375 |
| 124-126 white crude scale, a.m.p. | 2.375– 2.50 | 2.375– 2.50 | 2.25 – 2.375 |

****OKLAHOMA** (Per pound in barrels; in a few instances, per pound in burlap bags; F. o. b. Oklahoma refineries.)

| | | | |
|---|---|---|---|
| 124-126 White Crude Scale, a.m.p. | 1.75 – 2.00 | 2.00 | 2.00 |

## DISTILLATE, GAS AND FUEL OIL

**PENNSYLVANIA** (For outside Pittsburgh district)

| | | | |
|---|---|---|---|
| 36-40 fuel oil | 3.50 – 3.625 | 3.375– 3.50 | 3.375– 3.75 |
| 30-34 fuel oil | 3.50 – 3.625 | 3.375– 3.50 | 3.375– 3.625 |
| 28-32 fuel oil | 3.50 – 3.625 | 3.375– 3.50 | 3.375– 3.625 |

**Note:** Zero cold test fuel oils are quoted 0.25c to 0.50c higher than prices shown above, beginning Dec. 8.

**OKLAHOMA** (F. o. b. Oklahoma refineries)

| | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| 38-40 straw distillate | 2.875– 3.125 | 2.875– 3.125 | 3.00 – 3.125 |
| 36-38 straw distillate | 2.75 – 2.875 | 2.75 – 2.875 | 2.875– 3.00 |
| 32-36 straw gas oil | 2.50 – 2.625 | 2.50 – 2.625 | 2.50 – 2.625 |
| 32-36 straw gas oil zero | 2.625– 2.875 | 2.625– 2.875 | 2.75 – 2.875 |
| 32-36 dark gas oil | 2.125– 2.25 | 2.125– 2.25 | 2.125– 2.375 |
| 32-36 dark gas oil zero | 2.625– 2.75 | 2.625– 2.75 | 2.625– 2.875 |
| 28-30 zero fuel oil(per bbl.) | $0.85 – 0.95 | $0.85 – 0.95 | $0.85 – 0.95 |
| 28-30 fuel oil (per bbl.) | $0.80 – 0.825 | $0.80 – 0.825 | $0.80 – 0.825 |
| 26-28 fuel oil (per bbl.) | $0.70 – 0.75 | $0.70 – 0.75 | $0.70 – 0.75 |
| 24-26 fuel oil (per bbl.) | $0.60 – 0.70 | $0.60 – 0.70 | $0.65 – 0.70 |
| 22-26 fuel oil (per bbl.) | $0.525– 0.575 | $0.525– 0.575 | $0.55 – 0.60 |
| 18-22 fuel oil (per bbl.) | $0.45 – 0.50 | $0.45 – 0.50 | $0.475– 0.525 |
| 16-20 fuel oil (per bbl.) | $0.425– 0.45 | $0.425– 0.45 | $0.425– 0.475 |
| 14-16 fuel oil (per bbl.) | $0.40 – 0.425 | $0.40 – 0.425 | $0.40 – 0.45 |

**KANSAS** (F. o. b. refinery Kansas destination)

| | | | |
|---|---|---|---|
| 38-40 straw distillate | 3.00 – 3.50 | 3.00 – 3.50 | 3.25 – 3.50 |
| 36-38 straw distillate | 3.00 | 3.00 | 3.00 |
| 32-36 straw gas oil | 3.00 | 3.00 | 3.00 |
| 18-22 fuel oil (per bbl.) | $0.70 – 0.75 | $0.70 – 0.75 | $0.70 – 0.75 |
| 10-14 fuel oil (per bbl.) | $0.55 – 0.65 | $0.55 – 0.65 | $0.55 – 0.65 |

**NORTH TEXAS** (F. o. b. North Texas refineries)

| | | | |
|---|---|---|---|
| 38-40 straw distillate | 2.75 – 3.00 | 2.75 – 3.00 | 2.875– 3.00 |
| 38-40 p.w.treated distillate | 3.125– 3.25 | 3.125– 3.25 | 3.125– 3.25 |
| 32-36 gas oil, cracked | 2.25 – 2.50 | 2.25 – 2.50 | 2.25 – 2.50 |
| 32-36 St. reduced gas oil | 2.125– 2.375 | 2.125– 2.375 | 2.125– 2.375 |
| 24-26 fuel oil (per bbl.) | $0.50 | $0.50 | $0.50 |
| 20-24 fuel oil (per bbl.) | $0.45 | $0.45 | $0.45 |
| 18-22 fuel oil (per bbl.) | $0.40 | $0.40 | $0.40 |

****WEST TEXAS** (F. o. b. West Texas refinery, or unrestricted shipment)

| | | | |
|---|---|---|---|
| 34-38 gas oil | 2.125– 2.375 | 2.125– 2.375 | 2.125– 2.375 |
| 30-32 gas oil | 1.875– 2.125 | 1.875– 2.125 | 1.875– 2.125 |
| 28-30 zero gas oil | 2.25 – 2.50 | 2.25 – 2.50 | 2.25 – 2.50 |
| 18-22 fuel oil (per bbl.) | $0.40 –$0.50 | $0.40 –$0.50 | $0.50 –$0.60 |

**NORTH LOUISIANA** (N. La., Ark. and Miss. destination)

| | | | |
|---|---|---|---|
| 32-36 gas oil, dark | *3.25 | *3.25 | *3.25 |
| 32-36 gas oil, straw | *3.25 | *3.25 | *3.25 |
| 14-16 fuel oil (per bbl.) | $0.75 –$0.85 | $0.75 –$0.85 | $0.75 –$0.85 |

**ARKANSAS** (Ark., N. La. and Miss. destination)

| | | | |
|---|---|---|---|
| 32-36 gas oil, straw | 3.25 | 3.25 | 3.25 |
| 32-36 dark gas oil | 3.25 | 3.25 | 3.25 |
| 28-30 gas oil | 3.00 | 3.00 | 3.00 |
| 20-24 fuel oil (per bbl.) | $0.90 –$0.95 | $0.90 –$0.95 | $0.90 –$0.95 |
| 9-12 fuel oil (per bbl.) | $0.70 –$0.75 | $0.70 –$0.75 | $0.70 –$0.75 |
| Black oil | 3.25 | 3.25 | 3.25 |

**CALIFORNIA** (F. o. b. San Joaquin Valley. Nominal pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

| | | | |
|---|---|---|---|
| 14-18 fuel oil (per bbl.) | $0.35 –$0.60 | $0.35 –$0.60 | $0.35 –$0.60 |
| 14-18 Bunker oil (per bbl.) | $0.65 –$0.85 | $0.65 –$0.85 | $0.65 –$0.85 |
| 30-34 gas oil (per bbl.) | $0.80 –$1.05 | $0.80 –$1.05 | $0.85 –$1.05 |
| 27 Plus Diesel oil (per bbl.) | $0.80 –$1.05 | $0.85 –$1.05 | $0.85 –$1.05 |

## PETROLATUMS

**PENNSYLVANIA** (Per pound, in barrels, carload lots, f. o. b. refinery. In tank cars ⅝c to ¾c per pound less.) One refiner quoting.

| | | | |
|---|---|---|---|
| Snow White | 8.50 | 8.50 | 8.50 |
| Lily White | 7.50 | 7.50 | 7.50 |
| Cream White | 6.50 | 6.50 | 6.50 |
| Light Amber | 3.375 | 3.375– 3.625 | 3.375– 3.625 |
| Amber | 3.125 | 3.125– 3.375 | 3.125– 3.375 |
| Red | 2.875 | 2.875– 3.00 | 2.875– 3.00 |

## PETROLEUM COKE

****OKLAHOMA** (F. o b Oklahoma refineries)

**(Per ton in car lots)**

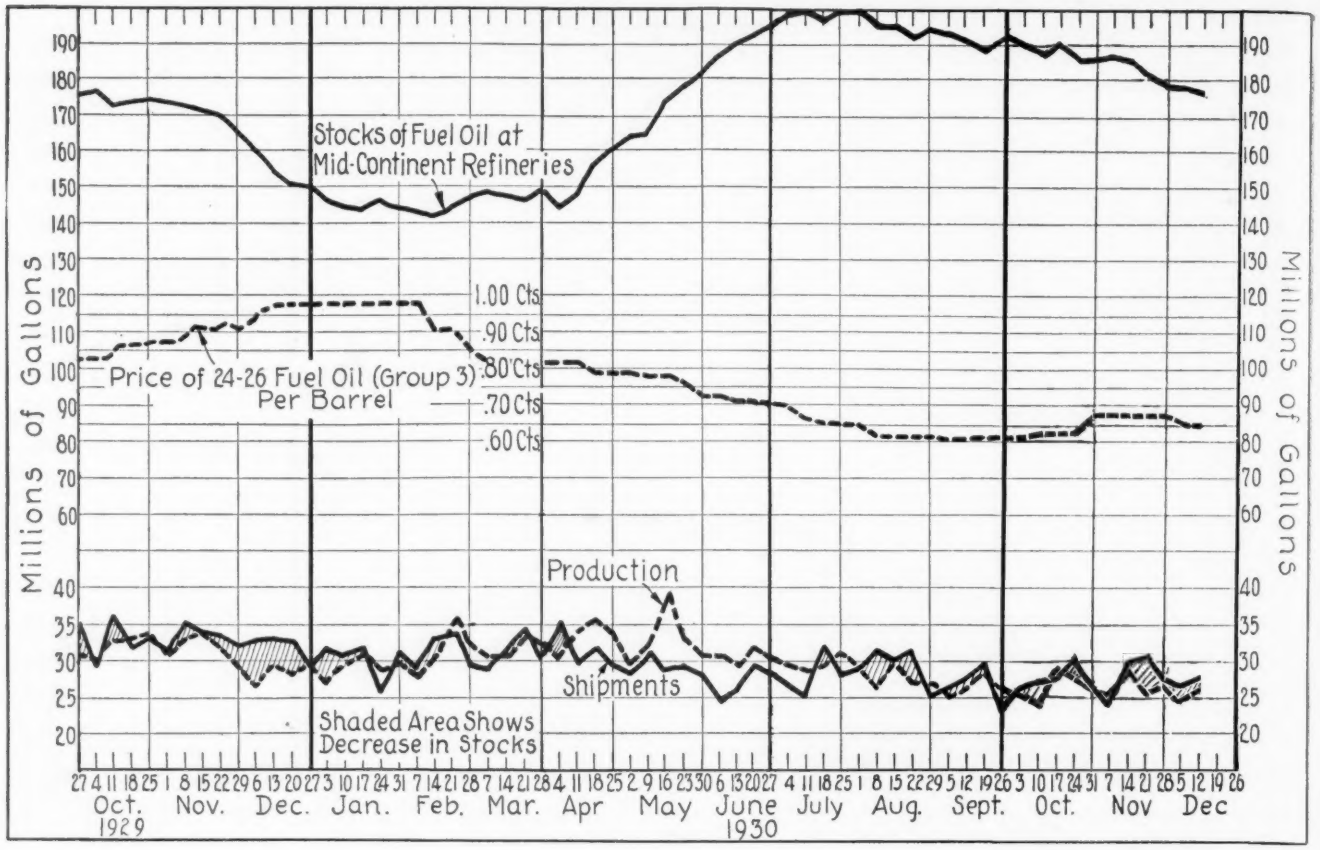
| | | | |
|---|---|---|---|
| Lump | $4.50 –$5.00 | $4.50 –$5.00 | $4.50 –$5.00 |
| Still run | $3.00 | $3.00 | $3.00 |
| Breeze | $2.00 | $2.00 | $2.00 |

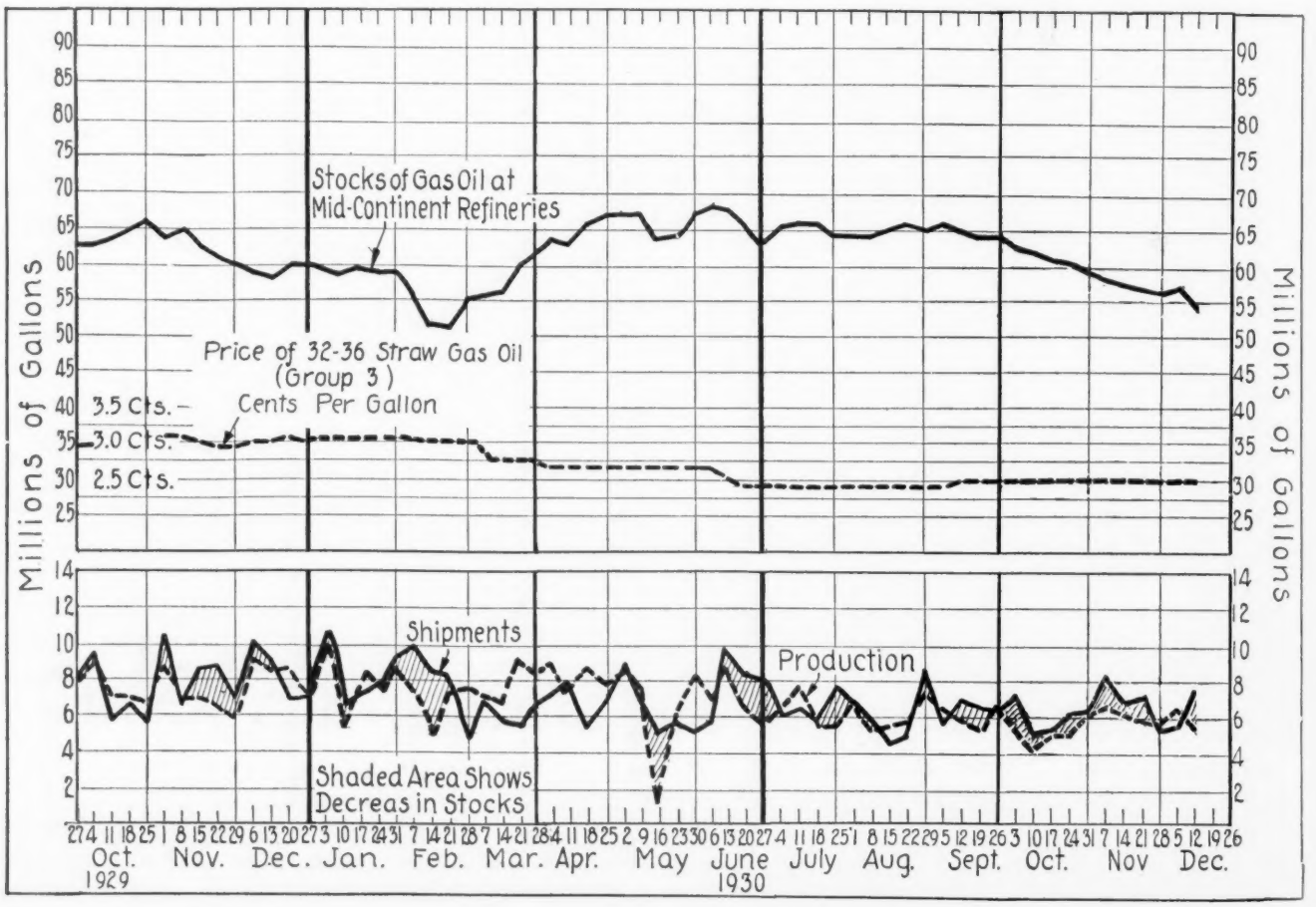
**†Prices nominal ††Only one refiner quoting *Quotations only**

****Represents Both Sales and Quotations.**

# Barometer of Mid-Continent Refinery Market—Week Ending December 12

*Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News*


Millions of Gallons
Stocks of Fuel Oil at Mid-Continent Refineries
Price of 24-26 Fuel Oil (Group 3) Per Barrel
1.00 Cts
.90 Cts
.80 Cts
.70 Cts
.60 Cts
Production
Shipments
Shaded Area Shows Decrease in Stocks
Oct. 1929 Nov. Dec. Jan. Feb. Mar. Apr May June 1930 July Aug. Sept. Oct. Nov Dec


Millions of Gallons
Stocks of Gas Oil at Mid-Continent Refineries
Price of 32-36 Straw Gas Oil (Group 3)
Cents Per Gallon
3.5 Cts.
3.0 Cts.
2.5 Cts.
Shipments
Production
Shaded Area Shows Decreas in Stocks
Oct. 1929 Nov. Dec. Jan. Feb. Mar. Apr. May June 1930 July Aug. Sept. Oct. Nov Dec.

# In the Spotlight

Packages are getting "the spotlight." More and more manufacturers of motor oils, greases, and allied products are finding that correctly designed, brightly lithographed and convenient to use containers pay well in increased sales. In this era of package merchandising, Containers by Continental are playing a most important part.

CONTAINERS BY CONTINENTAL

# California Refinery Market

## Domestic and Export Gasoline Prices Lower

LOS ANGELES, Dec. 13

CALIFORNIA markets were featureless this week. Quotations were lower on gasoline and casinghead in local markets, and on U. S. Motor gasoline for export.

Exporters reported an increase in inquiries from the East coast for natural gasoline. Comparatively recent sales were reported at 6 cents. These prices applied only to the unstabilized product that requires specially constructed tankers for transportation. For stabilized goods quotations ranged approximately 1 cent higher.

Nothing further was heard from the Atlantic seaboard buyer that was in the market last week for a cargo of U. S. Motor gasoline.

Spot tank car movement of gasoline within the state was 7.50 cents and up. Shipment of motor fuel into adjoining states was at 7 to 8.25c cents.

Natural gasoline quotations were slightly lower. Approximately 10 cars of this commodity were reported sold by one dealer at between 5.75 and 6.50 cents. Quotations leaning toward the former figure.

Heavy oils were reported in good demand. Quotations were fairly steady on all commodities except fuel oil. Major refiners were reported asking $1.03 per barrel for 32-34 gas oil for smudging purposes although practically the same quality oil was offered by independent refiners at $0.85 to $1 per barrel.

Diesel oil, 27 plus, was offered at $0.75 to $0.85 per barrel. The price ranged up to $1.05 for the higher grades. A sale of several cars of 36-38 gas oil was made at about 3 cents per gallon.

Fuel oil made from Playa del Rey crude was quoted in tank car lots at 13 cents per barrel.

# Changes in New Car Models

### By John Younger, Editor, Automotive Abstracts

### The New Hudson Eight

The new high compression 8-cylinder power plant, set in a 7⅝ inch double-drop frame, of new design, is of the L-head design type, bore being 2⅞ inches and stroke 4½ inches. With these dimensions, the engine delivers 87 horsepower at 3600 revolutions per minute.

A noteworthy feature of the motor is a fuel by-pass furnishing a correctly-compounded high-velocity fuel mixture at idling and low speeds, thus smoothing motor performance and speeding acceleration to a marked degree.

The crankshaft revolves in five bearings, the thrust halves of which are ungrooved in accordance with a patented Hudson-developed system, making main and connecting rod bearings of an oil-retaining type.

Another engine detail is a system of cooling the engine oil by causing it to travel around a series of cooling baffles arranged throughout the length of the crankcase oil reservoir.

Continuous contact with these air-swept cooling baffles lowers the temperature of the oil an extra 45 degrees and enables it to retain its viscosity and lubricating qualities over much longer periods than ordinarily are considered safe.

Engine water cooling is by a powerful centrifugal pump which circulates the water at the rate of 40 gallons per minute. This is an increase in water circulation of 25 per cent.

Increased cooling efficiency is also aided by the radiator, which is higher than formerly, and by a new cooling fan which has been raised in order to draw cool outside air through the topmost or hottest part of the radiator.

Care has been taken to make the transmission housing oil-tight; this renders it possible for the owner to use the same grade of light, free-flowing transmission oil throughout year, regardless of season and temperature changes.

### The 1931 Essex

The new 1931 Essex Super-Six motor is characterized by a new brisk acceleration, with added horsepower at all speeds within the usual driving range. This power plant with the bore increased from 2¾ to 2⅞ inches and improved carburetion now develops 60 horsepower at 3300 revolutions per minute compared with 58 horsepower at 3400 revolutions per minute in last year's motor.

In securing this extra power a more flexible three jet carburetor has been installed which prevents too lean or rich a mixture for efficient operation regardless of weather; and new manifolding provides fuel mixture of high velocity flow for better low speed performance and acceleration.

Cooling by the thermo-syphon system is continued with an increase of 25 per cent in cooling capacity, giving an additional safety factor. Increased circulation is provided for between cylinder block and head insuring adequate cooling in extremes of heat.

Hudson patented circulating splash lubrication by which oil is pumped simultaneously to both ends of the motor block is now supplemented by labyrinthian oil cooling. Motor oil returning to oil sump from the bearings must pass through a series of open troughs inside the oil pan. By this additional circulation through the cool bottom section of the oil pan the oil temperature is reduced 45 degrees before again being pumped to the motor bearings. Permanent oil seals for fan and universal joints hold the lubricant for an indefinite period.

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NEW YORK—E. E. Aldrin, aviation manager of the Standard Oil Co. of New Jersey and vice-president of the Stanavo Specification Board Inc., has been invited to address the First International Aerial Safety Congress to be held in Paris, Dec. 10 to 23. Mr. Aldrin's paper is entitled "Safe Handling of Aviation Fuel," and since he has found it impractical to make the trip to Paris at this time, Mr. Gordon of L'Economique will present the paper and represent Mr. Aldrin at the congress.

# Exchange Station Tanks For Cash in Ky.

LOUISVILLE, Dec. 15.—A new basis of exchange of underground gasoline storage tanks at service stations in Kentucky has the approval of several companies it is announced in the current issue of the Kentucky Petroleum Marketer, official bulletin of the Kentucky Petroleum Marketers Association.

Instead of the new supplier of the station delivering a tank to the replaced supplier, the following charge is made for the tanks: $35 for a five-barrel, 14-gauge tank; $45 for a 10-barrel, 14-gauge; and $80 for a 20-barrel, 12 gauge tank.

Companies already approving the new exchange basis, as reported in the Marketer, are the Sun Oil Co., Shell Petroleum Corp., Gulf Refining Co., Pure Oil Co., and the Standard Oil Co. of Kentucky.

## Pennsylvania Markets

### Kerosine and Fuel Oil Active

CLEVELAND, Dec. 13.—Kerosine and fuel oil were the most active commodities in the western Pennsylvania refinery market this week. Demand for other oils was fair to good except for bright stock.

The call for kerosine was particularly good from buyers in the northern part of the eastern seaboard. The supply in Pennsylvania was reported none too plentiful. Water white 45 gravity kerosine at 4.75 cents was eliminated as a market factor around the middle of the week. A diminishing volume of sales was reported at 4.875 cents Friday and Saturday with most companies asking 5 cents a gallon. One refiner reported booking several orders at 5.25 cents and said he had been 15 to 20 cars behind on shipments for several weeks.

Several large orders for fuel oil were reported placed at about 3.25 to 3.375 cents a gallon. Prices advanced generally to a minimum of 3.50 cents.

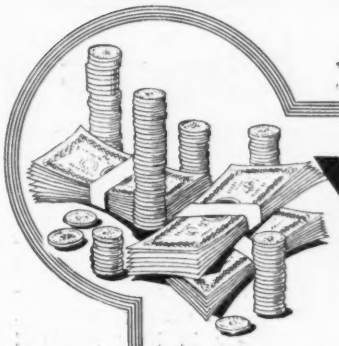
Neutral oils with minimum of 400 flash were relatively scarce. Demand showed further pickup. Some relatively low flash oils have been offered at substantial price concessions by one or two refiners. To date this has not hurt the demand or prices for the better grades of material.

Gasoline generally was steady both in demand and price. Cylinder stocks were relatively scarce. Prices showed little change despite the quiet demand. Bright stock sold 1 to 2 cents a gallon lower. Buyers were inquiring for bright stock contracts over next year.

## Kettleman Land Carried At $7 Per Acre

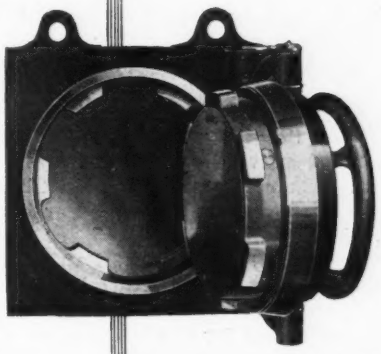
NEW YORK, Dec. 13.—Standard Oil Co. of California estimates crude oil recovery from Kettleman Hills at 100,000 barrels an acre. The company holds fee to half the acreage of the area and carries its holdings on its books at $7 an acre, it has notified the New York Stock Exchange in listing 256,920 additional no par shares with which to pay its 2 per cent stock dividend Dec. 15.

The balance sheet of the Standard of California and subsidiaries as of Sept. 30 showed total assets after depreciation and depletion of $612,440,894, compared with $604,724,492 Dec. 31. Current assets amounted to $107,677,317 and current liabilities to $12,942,774. Of the current assets $51,553,570 was oil inventory, $16,842,920 cash and call loans, and $2,746,499 marketable securities. Dec. 31 oil inventory amounted to $52,228,119.

IT'S YOUR MONEY KEEP IT SAFE!

HARD cash—the money you take in during each business day—presents a constant invitation to hold-up men and burglars. They make it their business to discover the places where cash is unguarded. You should make it your business to see that *your* money is beyond their reach.



Illustrated Folder describing the York Round Door Chest in detail will be sent gladly on request.

The York Round Door Chest meets every requirement of the modern

**Filling Stations**

and has a record for successful resistance to burglars that is unexcelled. When installed, it is anchored in a block of solid concrete which gives complete protection against fire and absolutely prevents removal from the building or attack at any point except the heavy thief-proof door.

The York Chest will pay for itself in a reasonable length of time by the saving in burglary insurance alone.

YORK SAFES

YORK SAFE & LOCK CO.

YORK • PENNSYLVANIA

VAPOR PHASE REFINING

*WILL*

Increase your gasoline yields,
Improve your gasoline quality,
and
Reduce your refining costs.

THE GRAY PROCESSES CORPORATION

961-975 Frelinghuysen Avenue
NEWARK, NEW JERSEY

# Eastern Domestic Markets

## Gasoline Markets Generally Unsettled

Staff Special
NEW YORK, Dec. 13

EASTERN gasoline markets generally were unsettled during the week ended Dec. 13. Buying was in keeping with seasonal demand at prices which prevailed during the preceding week. The market at New York harbor took on an improved appearance at the beginning of the week when dealers reported it difficult to obtain U. S. Motor at 6 cents for resale. Shading of posted prices increased considerably as the week advanced, however, and the market lost the improvement it had gained earlier in the week.

Fair sized sales of U. S. Motor gasoline were reported by New York harbor sellers at 6.25 cents throughout the week. Occasional orders were received at 6.75 cents. The greater volume of gasoline for shipment in tank cars out of the harbor district sold at around 6.50 cents. One large refiner reported he was shading his price of 6.50 cents.

In the Baltimore and Philadelphia districts, prices for U. S. Motor gasoline were fairly steady with no sales reported under 6.50 cents.

California gasoline received little attention at New York harbor. However, this goods was in good demand in both the Baltimore and Philadelphia markets at 7.25 cents per gallon.

Gasoline markets in New England featured lower prices when the majority of companies offered to deliver U. S. Motor for 7.25 cents within the Boston switching limits. Two major refiners began quoting 6.50 cents, f.o.b. their refineries at Fall River. A large Maine buyer came into the Portland market and received an 8-cent delivered price in that district.

Fuel oils were in good demand in Boston and vicinity at unchanged prices. Domestic heating oil was available at 4.50 cents and furnace oil, 36-40 gravity, at 5.50 cents.

The market for burning oils at New York harbor was unsettled. Standard Oil Co. of New Jersey reduced its price on Saturday for distillate fuel oil, 28-30 gravity, a 0.25-cent to 4.25 cents. The same company reduced its prices for diesel oil 15 cents per barrel. The new price is $1.85 per barrel at Boston, New York, Baltimore and Charleston, and at Norfolk, $2.05 per barrel.

Posted prices for Grade C bunker oil were unchanged at $1.05 per barrel at New York harbor and Boston.

# Gulf Coast Markets

## Roumanian Refiner Takes French Cargo

Staff Special
NEW YORK, Dec. 13

LOWER cargo prices for gasoline and kerosine at the Gulf resulted from the bidding stimulated by a French inquiry which appeared last week. A Roumanian seller also entered the competition and took the business at considerably lower prices than those last paid at the Gulf.

The French inquiry specified approximately 23,000 barrels of 64-66, 375 end point gasoline and 3400 barrels of U. S. Motor gasoline as well as 19,000 barrels of prime white kerosine for early January lifting. The Roumanian seller took the business at 5.75 cents for the 64-66, 375 end point, 5 cents for the U. S. Motor and 2.75 cents for the kerosine. The lowest bids reported by American sellers were approximately 5.90 cents, 5.125 cents and 4.25 cents, respectively.

An inquiry was circulated for approximately 55,000 barrels of 26-30 gas oil for late January lifting. The lowest bids reported at the time of this writing were 3 cents. The market for 30 plus gas oil also became unsettled when sellers offered this goods at the same price quoted for the 26-30 grade.

Cargo prices for Grade C bunker oil were higher in the light of suppliers' reluctance to accept under $0.65 per barrel. The last sale reported was closed at $0.61 f.o.b. the Gulf. Grade C for bunkering was offered 10 cents lower at Tampico. The price of this oil for ships bunkers is now $0.90 per barrel throughout the Gulf.

### Venezuela Crude

The market for Venezuela crude was extremely quiet with none offered at this time. It was reported that orders could not be filled until January, and if then, a price above $0.80 would be necessary to attract offerings of Venezuela crude.

### Panuco Crude

Panuco crude was in good demand. Sales were reported at $0.56 per barrel.

# Wax Markets

### Scale Prices Higher

NEW YORK, Dec. 13.—Prices for scale wax continued to advance in a market stimulated by numerous inquiries from the United Kingdom specifying 100 to 200 tons for late December and early January shipment. Sales of yellow scale, 124-126 A.m.p., were reported at 2.35 cents per pound. Prices for other grades of wax remained generally unchanged.

# Tank Car Testing Device Patents Are Issued

CLEVELAND, Dec. 15.—Standard Liquid Testing Devices, Inc., has been granted patents on its device for sampling and measuring the contents of tank cars. The device is the invention of John M. Mayhall of the Anderson Prichard Oil Corp., and Howard C. Morrison of Milwaukee.

The device consists of a staff for insertion in the dome of a tank car on arrival at the unloading point. Contents of the car may be thieved at three points simultaneously and the temperature of each of the three samples read from a thermometer in each sample cup. This allows a simple and accurate calculation of the average temperature.

Means is provided for testing for any water in the bottom of the car and for measuring accurately the volume of outage or innage. A few of the testing devices were made several years ago but distribution was stopped when patent applications were thrown into interference. Now that patents are issued the company plans to begin manufacturing the device again.

---

### Gulf Lubes Quiet

HOUSTON, Dec. 13.—The quiet that always precedes the holiday season is again apparent in the Gulf Coastal lubricant markets. Prices are unchanged in comparison with schedules of recent weeks. Normal shipments to jobbers continue, seasonal conditions considered.

## N. P. N. Service Record

**Some of the requests for information, data and advice, which were taken care of in various National Petroleum News offices in the past week are:**

**Kansas oil dealer referred to** maker of transfer signs for trucks, gasoline pumps, etc.

* * *

**North Dakota oil distributor told** what connection a large oil marketing company he inquired about had with the Standard group.

* * *

**Kentucky motor dealer contemplating** erection of a bulk oil plant and asking our opinion on lay-out, etc., told in two-page letter what points he should consider before building, how he could reduce truck-hauling costs, how semi-trailers would help hauling and keep down costs, and other pertinent information.

* * *

**French oil distributor furnished** names and addresses of five Independent refiners who would be able to ship petroleum products to France and with whom he might make arrangements for representation.

* * *

**Chicago inquirer told when the** 1931 passenger car capacity chart will be out; where he may obtain a capacity chart for trucks and tractors; and where one for airplanes.

* * *

**Chicago oil refinery equipment** maker telegraphed crude production statistics for a period in 1929.

* * *

**Wisconsin representative of large** oil company furnished list of 200 U. S. cities in which Independent refiners operate refineries.

* * *

**Illinois oil man told where to obtain** a copy of the code of marketing ethics with latest A.P.I. interpretations and how to report transgressions against the code.

* * *

**Illinois branch of national mail-order** house told in three-page letter of advantages of motor lubricants made from various crudes; and referred to four books on lubrication, together with publisher's name and address.

* * *

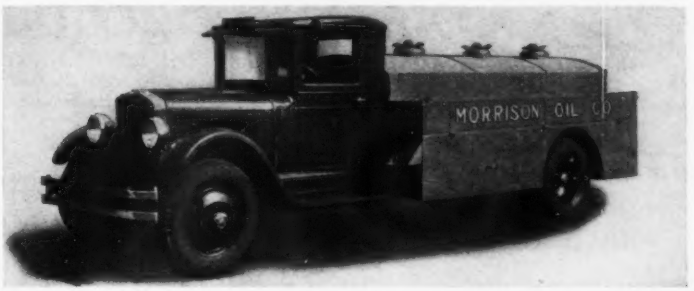
**Ohio representative of large oil** refiner and jobber told how to arrive at viscosity of a motor oil at a specified operating temperature in a motor car; referred to source for results of experimental work along this line, and to future articles to be published by N.P.N. on this subject.

* * *

**Large northwestern refiner and** jobber, in an effort to decide whether to go into super service station building, told in four-page letter what experience of other super station operators has been; how the cost of these stations runs; how motorists feel about them; what experience shows from handling tires, batteries and diversified merchandise at these stations, and his attention called to a series of articles being prepared for publication in N.P.N. after considerable investigation on this subject, which should help companies to decide whether to enter the super service station field or not.

* * *

**Canadian oil jobber referred to** ten N.P.N. articles on gasoline pipelines being built into the central west U. S. territory.


OWOSSO

TRUCK AND TRAILER TANKS

*Appearance*

*as well as sturdy construction*

The advertising appeal of oil company delivery equipment should not be underestimated. This Owosso Truck Tank built for the Morrison Oil Co.—a semi-oval type—will be an advertising asset to that company and yet—it is made to stand the test of time over rough country roads—the quick starting and stopping of city traffic.

*Write to Owosso for prices on your Truck Tank requirements.*

**OWOSSO BOILER & WELDING WORKS**

**Owosso, Michigan**

Gasoline And Other Motor Fuels

by Ellis and Meigs, is a book which gives a complete survey of the field and a description of practically every process of making gasoline and most other motor fuels of promise or prominence.

The price of the book is $10. Just send us your check and we will mail a copy of it to you.

National Petroleum News, 1213 W. Third St., Cleveland, Ohio

BETHLEHEM

WAX PLANT EQUIPMENT

*Filter Presses*
*Wax Distillate Chilling Machines*
*Wax Testing Presses*
*Wax Moulding Presses*
*Scale Wax Cooling Drums*
*Paraffine Wax Sweater Plants*
*Complete Wax Plants designed and built*
*Pumps, Stills, Towers, Condensers, and other Oil Refinery Equipment*
*Oil Burning Systems*

BETHLEHEM STEEL COMPANY, *General Offices: Bethlehem, Pa.*

*District Offices:* New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis.

*Pacific Coast Distributor:* Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu.

# Complete Seaboard Market

*(Export Markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)*

## Eastern Domestic Market

**(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in some states.)**

| U. S. MOTOR GASOLINE | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| New York harbor | 6.25 – 6.50 | 6.25 – 6.50 | 6.25 – 6.75 |
| Portland district | *8.00 – 8.25 | **8.25 | **8.25 |
| Boston district | **7.25 | **7.25 | **7.75 |
| Providence district | *7.50 – 7.75 | *7.50 – 7.75 | *7.875– 8.25 |
| Philadelphia district | 6.50 – 6.75 | 6.50 – 6.75 | 6.75 – 7.00 |
| Baltimore district | 6.50 – 6.75 | 6.50 – 6.75 | 6.75 – 7.00 |
| Norfolk district | 6.75 – 7.00 | 7.00 – 7.25 | 7.00 – 7.25 |
| Charleston district | 7.00 | 7.00 | 7.00 |
| Savannah district | 6.75 – 7.00 | 7.00 | 7.00 |
| Jacksonville district | 6.75 – 7.00 | 7.00 | 7.00 |
| **CALIFORNIA, U. S. MOTOR GASOLINE** | | | |
| New York harbor | †7.00 | 7.00 – 7.50 | 7.00 – 7.50 |
| Philadelphia district | 7.25 | 7.25 | 7.25 – 7.50 |
| Baltimore district | 7.00 – 7.25 | 7.00 – 7.25 | 7.00 – 7.25 |
| **‡DOMESTIC AVIATION GASOLINE** | | | |
| New York harbor | 9.50 –13.00 | 9.50 –13.00 | 10.00 –13.00 |
| Philadelphia | 9.50 –12.00 | 9.50 –12.00 | 10.00 –12.00 |
| Baltimore | 11.00 –13.00 | 11.00 –13.00 | 11.00 –13.00 |
| Boston | 11.50 –13.00 | 11.50 –13.00 | 11.50 –13.00 |

‡Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167°F. and not less than 122°F.; 50% recovery at 221°; 90% at 311°; 96% at 347° end point 374°F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

| | | | |
|---|---|---|---|
| **WATER WHITE KEROSINE** | | | |
| New York harbor | 6.00 – 6.25 | 6.00 – 6.25 | 6.00 – 6.25 |
| Philadelphia district | 6.00 – 6.25 | 6.00 – 6.25 | 6.00 – 6.25 |
| Baltimore district | 6.50 | 6.50 | 6.50 |
| **GAS OIL: 28-34 Gravity** | | | |
| New York harbor | 4.50 | 4.50 | 4.50 – 4.75 |
| Boston district | 4.50 | 4.50 | 4.50 – 4.75 |
| **FURNACE OIL: 36-40 Gravity** | | | |
| New York harbor | 5.50 | 5.50 – 6.00 | 5.50 – 6.00 |
| Boston district | 5.50 | 5.50 – 6.00 | 5.50 – 6.00 |
| **GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)** | | | |
| New York harbor | $1.05 | $1.05 | $1.05 |
| Boston district | $1.05 | $1.05 | $1.05 |
| **DIESEL OIL** | | | |
| New York harbor | $1.85 | $2.00 | $2.00 |

†Nominal. *Delivered prices. **Minimum delivered price.

## New York Export Market

**(Lubricating oils are per gal. in bbls. F.a.s. New York)**

| | Dec. 15 | Dec. 8 | Dec. 1 |
|---|---|---|---|
| **CYLINDER OILS (Pennsylvania Products)** | | | |
| Bright stock, No. 8 color | 26.00 –29.00 | 27.50 –29.75 | 27.50 –29.50 |
| Bright stock, No. 6½ color diluted | 25.00 –27.00 | 26.00 –28.00 | 26.00 –28.00 |
| 600 D filtered | 24.00 –27.00 | 24.00 –27.00 | 24.00 –28.00 |
| 600 Warren E. filtered | 21.00 –24.00 | 21.50 –24.00 | 22.00 –25.00 |
| 600 stm. refd. unfiltered | 16.00 –17.50 | 16.50 –17.50 | 16.50 –17.50 |
| 650 stm. refd. unfiltered | 19.50 –20.50 | 19.50 –20.50 | 20.00 –22.00 |
| 600 flash, steam refined | 22.00 –24.00 | 22.00 –24.00 | 22.00 –24.00 |
| 630 flash, steam refined | 30.00 –33.00 | 31.00 –33.00 | 31.00 –33.00 |
| **RED PARAFFIN OILS (Vis. 100°)** | | | |
| 300 vis. No. 6½ color | 17.00 –20.00 | 17.00 –20.00 | 17.00 –19.00 |
| 250 vis. No. 6 color | 16.50 –17.50 | 16.50 –17.50 | 16.50 –17.50 |
| 200 vis. No. 6 color | 14.75 –17.00 | 14.75 –17.00 | 16.25 –17.00 |
| **PALE PARAFFIN OILS (Vis. 100°)** | | | |
| 230 vis. No. 3½ color | 21.50 | 21.50 | 21.50 |
| 180 vis. No. 3¼ color | 17.00 –18.00 | 17.00 –18.00 | 17.00 –18.00 |
| 100 vis. No. 2¼ color | 12.50 –15.00 | 12.50 –15.00 | 12.50 –15.00 |
| **MOTOR OILS (Vis. 100°)** | | | |
| 600 vis. No. 7 color | 28.00 –30.00 | 30.00 –32.00 | 30.00 –32.00 |
| 500 vis. No. 6½ color | 26.50 –29.50 | 27.50 –30.00 | 27.50 –30.00 |
| 400 vis. No. 7¼ color | 25.00 –28.00 | 26.00 –29.00 | 26.00 –29.00 |
| 300 vis. No. 6 color | 22.00 –26.00 | 22.00 –26.00 | 22.00 –26.00 |
| 200 vis. No. 6 color | 21.00 –23.50 | 21.00 –23.50 | 21.00 –23.50 |

## Wax Market

**(Melting points are A.M.P. method. Prices in cents per pound, f.a.s. carload lots).**

| NEW YORK | Dec. 15 | Dec. 8 | Dec. 1 |
|---|---|---|---|
| 124-126 Yellow crude scale | 2.35 – 2.50 | 2.25 – 2.375 | 2.25 – 2.375 |
| 122-124 White crude scale | 2.30 – 2.50 | 2.30 – 2.50 | 2.30 – 2.40 |
| 124-126 White crude scale | 2.30 – 2.50 | 2.30 – 2.50 | 2.30 – 2.40 |
| 123-125 Fully refined | 3.25 | 3.25 | 3.25 |
| 125-127 Fully refined | 3.375– 3.50 | 3.375– 3.50 | 3.375 |
| 128-130 Fully refined | 3.625 | 3.625 | 3.625 |
| 130-132 Fully refined | 3.875 | 3.875 | 3.875 |
| 133-135 Fully refined | 4.375 | 4.375 | 4.375 |
| 135-137 Fully refined | 4.625– 4.75 | 4.625– 4.75 | 4.625 |
| **NEW ORLEANS** | | | |
| 124-126 Yellow crude scale | 2.35 – 2.50 | 2.30 – 2.50 | 2.25 – 2.375 |
| 122-124 White crude scale | 2.375– 2.50 | 2.375– 2.50 | 2.375 |
| 124-126 White crude scale | 2.375– 2.50 | 2.375– 2.50 | 2.375 |
| 123-125 Fully refined | 3.25 | 3.25 | 3.25 |
| 125-127 Fully refined | 3.375– 3.50 | 3.375– 3.50 | 3.25 |
| 128-130 Fully refined | 3.50 – 3.625 | 3.50 – 3.625 | 3.375– 3.50 |
| 130-132 Fully refined | 3.75 | 3.75 | 3.75 |
| 133-135 Fully refined | 4.375 | 4.375 | 4.375 |

## Gulf Coast Bulk Market

**(Prices are f. o. b. Gulf oil terminals representing sellers' opinions covering bulk shipments of 20,000 barrels or more, for export and / or coastwise shipment unless otherwise noted.)**

| GASOLINE | Prices Dec. 15 | Prices Dec. 8 | Prices Dec. 1 |
|---|---|---|---|
| U. S. Motor | 5.125– 5.25 | 5.25 – 5.50 | 5.50 – 5.75 |
| 60-62, 400 e.p. | 5.50 | 5.75 | 6.00 |
| 61-63, 390 e.p. | †5.75 | 6.00 | 6.25 |
| 64-66, 375 e.p. | 5.95 – 6.25 | 6.25 – 6.50 | 6.50 – 6.75 |
| U. S. Motor, cases (cargoes) | $1.60 | $1.60 | $1.60 |
| 64-66, cases (cargoes) | $1.70 –$1.72 | $1.70 –$1.72 | $1.70 –$1.72 |
| †Nominal. | | | |
| **KEROSINE** | | | |
| 44 water white | 5.25 | 5.25 – 5.50 | 5.25 –5.50 |
| 41-43 prime white | 4.25 | 4.25 – 4.50 | 4.50 |
| Water white, cases (cargoes) | $1.40 | $1.40 | $1.40 |
| Prime white, cases (cargoes) | $1.30 | $1.30 | $1.30 |
| **GAS & BUNKER OILS** | | | |
| *26-30 translucent gas oil | 3.00 – 3.125 | 3.125– 3.25 | 3.125– 3.25 |
| *30 plus translucent gas oil | 3.00 – 3.125 | 3.375– 3.50 | 3.375– 3.50 |
| Grade C bunker oil, for ships' bunkers, per bbl. | $0.90 | $0.90 | $0.90 |
| Grade C bunker oil, per bbl. in cargoes | $0.65 –$0.70 | $0.60 –$0.65 | $0.60 –$0.65 |
| *Less than ½ of 1% sulphur. | | | |
| **MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)** | | | |
| Heavy Panuco crude taxes to be paid, per bbl. | $0.56 | $0.56 | $0.56 |
| Grade C bunker oil for bunkering, taxes paid, per bbl. | $0.90 | $0.90 | $1.00 |
| **SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F. cold test 0 Tanker, f. o. b. Gulf oil terminals).** | | | |
| 100 vis. No. 2 unfiltered pale | 5.00 – 5.75 | 4.75 – 5.75 | 5.50 – 5.75 |
| 200 vis. No. 3 unfiltered pale | 7.375– 8.25 | 7.375– 8.25 | 7.625– 8.25 |
| 300 vis. No. 3 unfiltered pale | 8.25 – 9.50 | 8.25 – 9.50 | 8.75 – 9.50 |
| 500 vis. No. 3½ unfiltered pale | 9.00 –10.50 | 9.00 –10.50 | 9.50 –10.50 |
| 750 vis. No. 4 unfiltered pale | 11.00 –12.75 | 11.50 –12.75 | 12.00 –12.75 |
| 1200 vis. No. 4 unfiltered pale | 14.00 –16.00 | 14.00 –16.00 | 14.00 –16.00 |
| 200 vis. No. 5-6 red oil | 6.50 – 7.00 | 6.75 – 7.00 | 6.75 – 7.50 |
| 300 vis. No. 5-6 red oil | 7.75 – 8.375 | 7.75 – 8.375 | 8.00 – 8.50 |
| 500 vis. No. 5-6 red oil | 8.25 – 9.00 | 8.25 – 9.00 | 9.00 – 9.375 |
| 750 vis. No. 5-6 red oil | 10.50 –11.50 | 10.50 –11.50 | 10.50 –11.50 |
| 1200 vis. No. 5-6 red oil | 13.50 –15.00 | 13.50 –15.00 | 13.50 –15.00 |

## Pacific Export Market

**(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)**

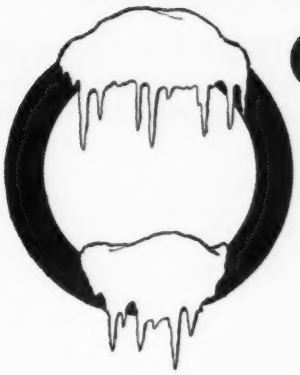
| | Dec. 15 | Dec. 8 | Dec. 1 |
|---|---|---|---|
| Gasoline, U. S. Motor, 53-55 Gravity | 4.875– 5.00 | 6.25 – 7.50 | 6.50 – 7.50 |
| Gasoline, U. S. Motor-blends and special cuts | 5.25 – 5.50 | 7.00 – 8.25 | 7.00 – 8.25 |
| Gasoline, 400 e.p. blend. | 5.50 – 6.00 | 8.25 – 9.25 | 8.25 – 9.25 |
| Gas Oil, 30-34 per bbl. | $0.85 –$1.00 | $0.87 –$1.05 | $0.87 –$1.05 |
| Diesel Oil, 27 plus, per bbl. | $0.85 –$1.05 | $0.85 –$1.05 | $0.85 –$1.05 |
| Bunker oil, 14-18 per bbl. | $0.64 –$0.85 | $0.60 –$0.85 | $0.64 –$0.85 |
| Fuel oil, 14-18 per bbl. | $0.60 –$0.85 | $0.60 –$0.85 | $0.60 –$0.85 |
| Kerosine, 38-40 w.w., 125-150 flash, per gal. | 5.00 – 6.00 | 5.00 – 6.00 | 5.00 – 6.00 |
| **Cased Goods** | | | |
| Gasoline, U. S. Motor | $1.75 –$1.85 | $1.75 –$1.85 | $1.75 –$1.85 |
| Gasoline, 400 e.p. blend | $1.85 –$2.00 | $1.85 –$2.00 | $1.85 –$2.00 |
| Kerosine, 38-40 w.w., 125-150 flash | $1.45 –$1.50 | $1.45 –$1.50 | $1.45 –$1.50 |

## Tanker Rates

**(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)**

| | Dec. 15 Crude &/or Fuel | Refined Oil &/or Spirits |
|---|---|---|
| Calif. to U. K. or Continental ports* | 21 | 18 |
| Gulf to U. K. or Continental ports* | 11 | †10 |
| North Atlantic to U. K. or Continental ports* | 9/6 | †8/6 |
| Calif. to North Atlantic ports (not E. of N. Y.) | $0.50 | $0.45–$0.50 |
| Gulf to North Atlantic ports (not E. of N. Y.)** | 14–16 | 14–18 |

*Continental ports in the range between Bordeaux and Hamburg, both inclusive. **Venezuela loading same rate, for Tampico 2c to 3c per bbl. additional. †Two ports discharged.



# 0° F.

# MAXIMUM POUR

**-TP- Winter Bright Stocks are made from 100% straight-run paraffine base Ranger Crude. They were the first pure paraffine base zero pour test bright stocks ever commercially offered, and have been on the market since October, 1927.**

GRADES

Stock No. 913W— 80/85 Viscosity at 210°
Stock No. 915W—120/125 Viscosity at 210°
Stock No. 917W—150/160 Viscosity at 210°

# -TP-

# WINTER BRIGHT STOCKS COMPLETELY DEWAXED

**Blend your winter oils from—TP—Zero.**

TEXAS PACIFIC COAL AND OIL COMPANY
FORT WORTH, TEXAS

# Tank Wagon, Service Station Markets for Gasoline and Kerosine

*(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)*

These Prices in Effect Dec. 15, 1930, as Posted by Principal Marketing Companies

## S.O. NEW JERSEY TERRITORY

| | Gasoline Total | | | | Oil |
|---|---|---|---|---|---|
| | T.W | Tax | T.W. | S.S. | T.W. |
| Atlantic City, N. J. | 11.5 | 3 | 14.5 | 16.5 | 11.5 |
| Newark, N. J. | 10.5 | 3 | 13.5 | 15.5 | 10.5 |
| Annapolis | 12 | 4 | 16 | 17 | 11 |
| Baltimore, Md. | 11.2 | 4 | 15.2 | 16.2 | 9.5 |
| Cumberland, Md. | 13 | 4 | 17 | 18 | 12 |
| Washington, D. C. | 11.7 | 2 | 13.7 | 14.7 | 10.7 |
| Danville, Va. | 12.8 | 5 | 17.8 | 18.8 | 11.8 |
| Norfolk, Va. | 11.3 | 5 | 16.3 | 17.3 | 10 |
| Richmond, Va. | 11.7 | 5 | 16.7 | 17.7 | 10.7 |
| Roanoke, Va. | 13 | 5 | 18 | 18 | 12 |
| Petersburg, Va. | 12.3 | 5 | 17.3 | 18.3 | 11.3 |
| Charleston, W. Va. | 12.5 | 4 | 16.5 | 17.5 | 11.5 |
| Keyser, W. Va. | 13.1 | 4 | 17.1 | 18.1 | 12.1 |
| Parkersburg, W. Va. | 11.2 | 4 | 15.2 | 16.2 | 10.2 |
| Wheeling, W. Va. | 12.4 | 4 | 16.4 | 17.4 | 11.4 |
| Raleigh, N. C. | 13.2 | 5 | 18.2 | 19.2 | 12.2 |
| Charlotte, N. C. | 13.3 | 5 | 18.3 | 19.3 | 12.3 |
| Hickory, N. C. | 13.6 | 5 | 18.6 | 19.6 | 12.6 |
| Mt. Airy, N. C. | 13.5 | 5 | 18.5 | 19.5 | 12.5 |
| Salisbury, N. C. | 13.5 | 5 | 18.5 | 19.5 | 12.5 |
| Charleston, S. C. | 11.3 | 6 | 17.3 | 18.3 | 10.3 |
| Columbia, S. C. | 13.2 | 6 | 19.2 | 20.2 | 12.2 |

**Note: 2c per gallon discount off retail t.w. price of gasoline to dealers only thru S. O. New Jersey territory, except Washington, D. C. where discount is 3c.**

## CONTINENTAL OIL

| | | | | | |
|---|---|---|---|---|---|
| Denver, Colo. | 12 | 4 | 16 | 19 | 13.5 |
| Pueblo, Colo. | 13 | 4 | 17 | 20 | 13.5 |
| Grand Junc., Colo. | 14 | 4 | 18 | 19 | 17 |
| Casper, Wyo. | 13 | 4 | 17 | 20 | 12 |
| Cheyenne, Wyo. | 14 | 4 | 18 | 21 | 13.5 |
| Butte, Mont. | 14 | 5 | 19 | 22 | 18 |
| Helena, Mont. | 15 | 5 | 20 | 23 | 18 |
| Salt Lake City, Utah | 16.5 | 3½ | 20 | 23 | 17 |
| Boise, Ida. | 18.5 | 5 | 23.5 | .... | 19 |
| Twin Falls, Ida. | 18.5 | 5 | 23.5 | .... | 19 |
| Albuquerque, N. M. | 11 | 5 | 16 | 16 | 14 |

## S. O. CALIFORNIA

| | Tax | Retail Price | Posted Wholesale | T.W. |
|---|---|---|---|---|
| Phoenix, Ariz. | 4 | 23.5 | 19.5 | 20 |
| Los Angeles, Cal. | 3 | 20.5 | 22.5 | 15.5 |
| Fresno, Cal. | 3 | 21 | 23 | 17 |
| San Francisco, Cal. | 3 | 21 | 23 | 15.5 |
| Reno, Nev. | 4 | 26 | 28 | 19 |
| Portland, Ore. | 4 | 22.5 | 24.5 | 16.5 |
| Seattle, Wash. | 3 | 21.5 | 23.5 | 16.5 |
| Spokane, Wash. | 3 | 22 | 27.5 | 20.5 |
| Tacoma, Wash. | 3 | 21.5 | 23.5 | 16.5 |

**Note: 6c per gal. discount to dealers off posted wholesale price of gasoline to customers taking tank truck delivery, thru S. O. California territory except 1c discount at Phoenix to dealers only. This discount determines net t.w. price.**

## S. O. LOUISIANA

| | Posted Retail T.W. | Tax | Total Posted Retail T.W. | Posted Retail S.S. | T.W. |
|---|---|---|---|---|---|
| Little Rock, Ark. | 10 | 5 | 15 | 16 | 12 |
| Alexandria, La. | 11.5 | *6 | 17.5 | 18.5 | †13 |
| Baton Rouge, La. | 11.5 | 5 | 16.5 | 17.5 | †13 |
| New Orleans, La. | 9.5 | *6 | 15.5 | 16.5 | †12 |
| Lake Charles, La. | 11.5 | *6 | 17.5 | 18.5 | †13 |
| Shreveport, La. | 11.5 | 5 | 16.5 | 17.5 | †13 |
| Lafayette, La. | 11.5 | *6 | 17.5 | 18.5 | †13 |
| Bristol, Tenn. | 14 | 5 | 19 | 20 | 14 |
| Chattanooga, Tenn. | 12.5 | 5 | 17.5 | 18.5 | 13 |
| Knoxville, Tenn. | 13 | 5 | 18 | 19 | 15 |
| Nashville, Tenn. | 12 | 5 | 17 | 18 | 15 |
| Memphis, Tenn. | 11 | 5 | 16 | 17 | 12.5 |

**Note: Discounts in S. O. La. territory: To dealers and commercial consumers from the tankwagon, 2c per gal. off posted retail t.w. price; to consumers at service stations when cash is paid for purchases at time of delivery, 1c per gal. off posted retail s.s. price.**

***Lake Charles, Alexandria, New Orleans and Lafayette gasoline tax includes 5c state tax and 1c parish tax. New Orleans kerosine price includes 1c parish tax in addition to 1c state tax.**

**†Kerosine price in Louisiana includes 1c state tax.**

## S. O. KENTUCKY

| | | | | | |
|---|---|---|---|---|---|
| Ashland, Ky. | 13 | 5 | 18 | 20 | 15 |
| Catlettsburg, Ky. | 13 | 5 | 18 | 20 | 15 |
| Lexington, Ky. | 12 | 5 | 17 | 18 | 14.5 |
| Louisville, Ky. | 11 | 5 | 16 | 18 | 12 |
| Bowling Green, Ky. | 14 | 5 | 19 | 21 | 14.5 |
| Corbin, Ky. | 14 | 5 | 19 | 21 | 15 |
| Paducah, Ky. | 11 | 5 | 16 | 18 | 12 |
| Covington, Ky. | 13 | 5 | 18 | 20 | 14.5 |

## Latest Changes in Tank Wagon Prices

### Gasoline

**S. O. Kentucky**—The 1c cut in t. w. and 2c cut in s. s. prices at Birmingham reported in Dec. 10 issue as being effective Dec. 8, were effective Dec. 10.

Bowling Green, Corbin and Paducah, Ky., added to the table in this issue, prices as of Dec. 15.

**S. O. Indiana**—Total t. w. price on aviation gasoline at St. Louis has been in error at 17.9c, the ½c city tax not being effective on aviation grade. The price is 17.4c without this city tax, and is corrected in this issue.

**Continental Oil**—S. s. only cut 2c, Albuquerque, to 16c, same as t. w., **Dec. 10.**

**Magnolia Petroleum**—T. w. and s. s. cut 1c, Tulsa, to 13c and 17c, **Dec. 4.**

T. w. and s. s. up 1c, Ft. Smith and Little Rock, to 16.5c and 17.5c, and 15c and 16c respectively, **Dec. 2.**

**S. O. California**—On **Dec. 12** retail prices at Portland, Seattle and Tacoma were restored to levels prior to Nov. 13 cut. Portland up 2.5c to 22.5c, Seattle up 1.5c to 21.5c and Tacoma up 3c to 21.5c. Spokane unchanged at 22c. Retail price at Portland has been in error at 20.5c in the past few issues. It should have been 20c since the 2.5c cut on **Nov. 13.**

Retail price gasoline up 1c, Phoenix, to 23.5c, **Dec. 12.**

### Kerosine

**Magnolia Petroleum**—Kerosine cut 1c, San Antonio, to 10c, t. w., **Dec. 6.**

Kerosine cut 1c, Texarkana, to 11c t. w., **Nov. 26.**

| | Gasoline Total | | | | Oil |
|---|---|---|---|---|---|
| | T.W. | Tax | T.W. | S.S. | T.W. |
| Clarksdale, Miss. | 13 | 5 | 18 | 18 | 11 |
| Gulfport, Miss.†† | 13 | 5 | 18 | 18 | 13 |
| Jackson, Miss. | 10 | 5 | 15 | 17 | 13 |
| Natchez, Miss. | 13 | 5 | 18 | 20 | 13 |
| Vicksburg, Miss. | 13 | 5 | 18 | 20 | 13 |
| Birmingham, Ala.‡‡ | 13 | 4 | 17 | 18 | 14.5 |
| Mobile, Ala.‡ | 13 | 4 | 17 | 19 | 10.5 |
| Montgomery, Ala.* | 13 | 4 | 17 | 18 | 15 |
| Atlanta, Ga. | 14 | 6 | 20 | 22 | †13.5 |
| Augusta, Ga. | 14 | 6 | 20 | 22 | †15.5 |
| Macon, Ga. | 14 | 6 | 20 | 22 | †13 |
| Savannah, Ga. | 12 | 6 | 18 | 20 | †14 |
| Jacksonville, Fla. | 11 | 6 | 17 | 19 | 14 |
| Miami, Fla. | 13 | 6 | 19 | 21 | 14 |
| Tampa, Fla. | 12 | 6 | 18 | 20 | 13 |
| Pensacola, Fla.** | 14 | 6 | 20 | 21 | 13.5 |

**Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.**

***Local privilege tax of 1 cent on gasoline and ½ cent on kerosine at Montgomery included.**

**†Georgia kerosine prices include 1c state tax.**

****Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.**

**††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.**

**‡Mobile gasoline prices include 1c city tax.**

**‡‡Birmingham gasoline prices include 1c city tax.**

## S. O. NEBRASKA

| | Gasoline Total | | | | Oil |
|---|---|---|---|---|---|
| | T.W. | Tax | T.W. | S.S. | T.W. |
| Omaha, Neb. | 13.25 | 4 | 17.25 | 18.25 | 11.25 |
| McCook | 14.75 | 4 | 18.75 | 20.75 | 12.75 |
| Norfolk | 13.25 | 4 | 17.25 | 17.25 | 11.75 |
| North Platte | 14.75 | 4 | 18.75 | 20.75 | 12.50 |
| Scottsbluff | 14.75 | 4 | 18.75 | 20.75 | 12.25 |

**Note: Discounts: 1c per gal. off tank wagon price of gasoline for 1,000 gallon dumps per month to consumers taking tank wagon delivery only.**

## S. O. INDIANA

| | | | | |
|---|---|---|---|---|
| Chicago, Ill. | 13 | 3 | 16 | 17 | 11 |
| Decatur, Ill. | 13.4 | 3 | 16.4 | 16 | 11 |
| E. St. Louis, Ill. | 12.7 | 3 | 15.7 | 14.7 | 10.2 |
| Joliet, Ill. | 13.4 | 3 | 16.4 | 17.4 | 11 |
| Peoria, Ill. | 12 | 3 | 15 | 14 | 11 |
| Quincy, Ill. | 13.2 | 3 | 16.2 | 17.2 | 10.8 |
| Indianapolis, Ind. | 12.9 | 4 | 16.9 | 17.9 | 12.1 |
| Evansville, Ind. | 13.1 | 4 | 17.1 | 18.1 | 11.9 |
| South Bend, Ind. | 13.4 | 4 | 17.4 | 18.4 | 12.2 |
| Detroit, Mich. | 13.8 | 3 | 16.8 | 12.5 | 12.7 |
| Grand Rapids, Mich. | 12.7 | 3 | 15.7 | 16.7 | 12.6 |
| Saginaw, Mich. | 13.9 | 3 | 16.9 | 14.3 | 12.8 |
| Green Bay, Wisc. | 13.6 | 2 | 15.6 | 16.6 | 11.4 |
| Madison, Wisc. | 13.3 | 2 | 15.3 | 15.3 | 11.1 |
| Milwaukee, Wisc. | 13.1 | 2 | 15.1 | 15 | 10.9 |
| La Crosse, Wisc. | 14.2 | 2 | 16.2 | 17.2 | 12 |
| Minneapolis, Minn. | 14 | 3 | 17 | 17 | 11.9 |
| Duluth, Minn. | 14.5 | 3 | 17.5 | 17.5 | 11.9 |
| Mankato, Minn. | 11 | 3 | 14 | 14 | 11.7 |
| Des Moines, Ia. | 12.5 | 3 | 15.5 | 15.5 | 11.3 |
| Davenport, Ia. | 13.5 | 3 | 16.5 | 16.5 | 11.3 |
| Sioux City, Ia. | 13.1 | 3 | 16.1 | 15.9 | 10.9 |
| Mason City, Ia. | 13.5 | 3 | 16.5 | 17.5 | 11.3 |
| St. Louis, Mo. | *10.9 | 2 | 12.9 | 13.9 | 10.3 |
| Kansas City, Mo. | †12.9 | 2 | 14.9 | 14.9 | 9.6 |
| St. Joseph, Mo. | †13.5 | 2 | 15.5 | 11.9 | 10.1 |
| Fargo, N. D. | 15.9 | 3 | 18.9 | 19.9 | 13.9 |
| Grand Forks, N. D. | 16.2 | 3 | 19.2 | 20.2 | 14.2 |
| Minot, N. D. | 15.9 | 3 | 18.9 | 19.9 | 13.9 |
| Pierre, S. D. | 14 | 4 | 18 | 19 | 12.4 |
| Huron, S. D. | 13.5 | 4 | 17.5 | 17.5 | 12.7 |
| Wichita, Kans. | 11.8 | 3 | 14.8 | 13.8 | 9.8 |
| Bartlesville, Okla. | 11.5 | 4 | 15.5 | 18.5 | 9.5 |

S. O. Indiana's quantity contract price schedule thru territory (except in Chicago, which see below) on tank truck deliveries of gasoline, figured from the service station price is 3c for 500 gal. or more a month; and 4½c for 75,000 gals. or more a month.

In Chicago and vicinity, these discounts apply: Over 500 gals. per month, 4c per gal. off service station price; over 1,000 gals. per month, 5c per gal. off service station price.

*****Includes city tax of ½c.

**†**Includes city tax of 1c.

## S. O. OHIO

| | | | | | |
|---|---|---|---|---|---|
| Ohio statewide | 14 | 4 | 18 | 19 | 15 |
| Preble County | 14 | 4 | 18 | 18 | 15 |
| Lucas County | 11 | 4 | 15 | 15 | 15 |
| Butler County | 11 | 4 | 15 | 15 | 15 |

**Note:** Discount on gasoline to dealers and commercial consumers generally thru Ohio is 2c per gal. off above t.w. prices. In counties where prices are below statewide schedule, discount is 3c per gal. off t.w. price.

Discount on kerosine to dealers and commercial consumers is 3c per gal. off t.w. price thru Ohio.

## MAGNOLIA PETROLEUM

| | | | | | |
|---|---|---|---|---|---|
| Muskogee, Okla. | 11 | 4 | 15 | 18 | 9 |
| Oklahoma City | 9 | 4 | 13 | 16 | 10 |
| Tulsa, Okla. | 9 | 4 | 13 | 17 | 10 |
| Fort Smith, Ark.† | 12.5 | 4 | 16.5 | 17.5 | 12 |
| Little Rock, Ark. | 10 | 5 | 15 | 16 | 12 |
| Texarkana, Ark.* | 13 | 4 | 17 | 17 | 11 |
| Dallas, Tex. | 10 | 4 | 14 | 17 | 11 |
| Fort Worth, Tex. | 10 | 4 | 14 | 17 | 10 |
| Houston, Tex. | 11 | 4 | 15 | 19 | 11 |
| San Antonio, Tex. | 9 | 4 | 13 | 17 | 10 |
| El Paso, Tex. | 12 | 4 | 16 | 20 | 12 |

***Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.**

**†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.**

Above prices include these inspection fees on both gasoline and kerosine, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosine; Arkansas, 1/20c on both Florida, 1/8c on both; Illinois, 3/100c on both; Indiana, 4/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 3/10c to 1/2c on both; Nebraska, 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosine; Wisconsin, 3/50c on both.

Kerosine inspection fees only, per gallon: Iowa 7/100c; Michigan 1/5c to 4/5c per gal.

## Tank Wagon, Service Station Markets for Gasoline and Kerosine

These Prices in Effect Dec. 15, 1930, as Posted by Principal Marketing Companies

### S. O. NEW YORK

| | T.W. | Tax | Gasoline Total T.W. | S.S. | Oil T.W. |
|---|---|---|---|---|---|
| Greater New York City: Boroughs of Manhattan, Bronx, Queens & Kings | 12.3 | 2 | 14.3 | 16.3 | 10 |
| Borough of Richmond | 13.7 | 2 | 15.7 | 17.7 | 12 |
| Albany, N. Y. | 13.6 | 2 | 15.6 | 17.6 | 12.6 |
| Buffalo, N. Y. | 12.8 | 2 | 14.8 | 16.8 | 9 |
| Rochester, N. Y. | 13 | 2 | 15 | 17 | 9 |
| Syracuse, N. Y. | 15.8 | 2 | 17.8 | 19.8 | 12.8 |
| Boston, Mass. | 12.5 | 2 | 14.5 | 16.5 | 10 |
| Augusta, Me. | 15.8 | 4 | 19.8 | 21.8 | 12.8 |
| Manchester, N. H. | 15.4 | 4 | 19.4 | 21.4 | 10 |
| Burlington, Vt. | 16.3 | 4 | 20.3 | 22.3 | 13.3 |
| New Haven, Conn. | 15.6 | 2 | 17.6 | 19.6 | 12.6 |
| Providence, R. I. | 10.7 | 2 | 12.7 | 14.7 | 10 |

**Note: S. O. New York allows 3c off t.w. price to dealers in New York City, and 2c off t.w. price thru rest of territory.**

### ATLANTIC REFINING

| | | | | | |
|---|---|---|---|---|---|
| Pittsburgh, Pa. | 14 | * | 14 | 19 | 12 |
| Philadelphia, Pa. | 14 | * | 14 | 19 | 12 |
| Allentown, Pa. | 14 | * | 14 | 19 | 12 |
| Erie, Pa. | 14 | * | 14 | 18 | 12 |
| Scranton, Pa. | 14 | * | 14 | 19 | 12 |
| Altoona, Pa. | 14 | * | 14 | 19 | 12 |
| Dover, Del. | 14 | 3 | 17 | 19 | 12 |
| Wilmington, Del. | 14 | 3 | 17 | 19 | 12 |
| Boston, Mass. | 12.5 | 2 | 14.5 | 16.5 | 10 |
| Springfield, Mass. | 15.5 | 2 | 17.5 | 19.5 | 10 |
| Worcester, Mass. | 15.3 | 2 | 17.3 | 19.3 | 10 |
| Fall River, Mass. | 12.1 | 2 | 14.1 | 15.1 | 10 |
| Providence, R. I. | 10.7 | 2 | 12.7 | 14.7 | 10 |
| Hartford, Conn. | 15.5 | 2 | 17.5 | 19.5 | 10 |
| New Haven, Conn. | 15.6 | 2 | 17.6 | 19.6 | 10 |
| Atlantic City, N. J. | 12.5 | 2 | 14.5 | 15.5 | 11.5 |
| Camden, N. J. | 11.6 | 2 | 13.6 | 14.6 | 10.6 |
| Trenton, N. J. | 12 | 2 | 14 | 15 | 11 |
| Annapolis, Md. | 12 | 4 | 16 | 17 | 11 |
| Baltimore, Md. | 11.2 | 4 | 15.2 | 16.2 | 10.2 |
| Hagerstown, Md. | 12.7 | 4 | 16.7 | 17.7 | 11.7 |
| Richmond, Va. | 11.7 | 5 | 16.7 | 17.7 | 10.7 |
| Wilmington, N. C. | 11.4 | 5 | 16.4 | 17.4 | 12.4 |
| Brunswick, Ga. | 14 | 6 | 20 | 22 | **15 |
| Jacksonville, Fla. | 13 | 6 | 19 | 19 | 14 |

**Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics. Erie has dealer discount of 4c off t.w. price, effective May 28.**

*3-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosine prices include 1c state tax.

### NAPHTHA PRICES

| | Oleum Spirits | V.M.&P. Naphtha | Cleaner Naphtha |
|---|---|---|---|
| Chicago | 12.7 | 14.7 | 16.2 |
| Detroit | 15.4 | 16.9 | 17.7 |
| Kansas City | †13.9 | †15.4 | †16.2 |
| Milwaukee | 14.4 | *17.9 | *18.7 |
| Minneapolis | **18.7 | **20.2 | **21 |
| St. Louis | 13.6 | 15.1 | 15.9 |
| New York | | 10 | 23 |
| Boston | | 19 | 23 |

*Includes 2c state tax. †Includes 1c city tax.
**Includes 3c state tax.

#### Petroleum Spirits (Solvent)

| | |
|---|---|
| **Tank Cars (F.o.b. refinery or seaboard terminal)** | |
| New York harbor | 10.00 |
| Philadelphia district | 10.00 |
| Providence | 10.50 |
| **Tank Wagon or Steel Barrels** | |
| New York City | 15–16 |
| Syracuse | 17–18 |
| Rochester | 18 |
| Buffalo | 16–18 |
| Providence | 17–18 |
| Boston | 18–19 |
| Bridgeport | 15 |
| Newark | 14–16 |
| Philadelphia | 15 |
| Baltimore | 17 |

**Note: 2c off above t.w. prices to large buyers in some instances.**

### CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

| | T.W. | Tax | Gasoline Total T.W. | S.S. | Oil T.W. |
|---|---|---|---|---|---|
| **ONTARIO** | | | | | |
| Toronto | 18.5 | 5 | 23.5 | 27 | 19.5 |
| Ottawa | 18.5 | 5 | 23.5 | 27 | 19.5 |
| North Bay | 21.5 | 5 | 26.5 | 32 | 26 |
| Ft. William | 21.5 | 5 | 26.5 | 30 | 21.5 |
| Border Cities, including Windsor | 17.5 | 5 | 22.5 | 26 | 18.5 |
| **MANITOBA** | | | | | |
| Winnipeg | 20 | 5 | 25 | 29 | 20.5 |
| **SASKATCHEWAN** | | | | | |
| Regina | 25 | 5 | 30 | 34 | 25 |
| **ALBERTA** | | | | | |
| Edmonton | 26.5 | 5 | 31.5 | 35 | 26.5 |
| Calgary | 22.5 | 5 | 27.5 | 31 | 22.5 |
| **BRITISH COLUMBIA** | | | | | |
| Vancouver | 23 | 5 | 28 | 32 | 24 |
| **QUEBEC** | | | | | |
| Montreal | 19.5 | 5 | 24.5 | 28 | 20.5 |
| Quebec City | 20.5 | 5 | 25.5 | 29 | 21.5 |
| Three Rivers | 20.5 | 5 | 25.5 | 29 | 21.5 |
| **NEW BRUNSWICK** | | | | | |
| St. John | 19 | 5 | 24 | 28 | 21 |
| Moncton | 19 | 5 | 24 | 28 | 21 |
| **NOVA SCOTIA** | | | | | |
| Halifax | 19 | 5 | 24 | 28 | 21 |
| **PRINCE EDWARD ISLAND** | | | | | |
| Charlottetown | 19 | 5 | 24 | 28 | 21 |

Note: In districts surrounding these points 1c additional is added to city price.

### Aviation Gasoline Prices

Following are tank wagon prices of aviation gasoline in principal marketing territories showing state and municipal taxes:

#### S. O. NEW JERSEY

**Prices in Effect Dec. 15, 1930**

| | T.W. | Tax | T.W. |
|---|---|---|---|
| Newark, N. J. | 17.4 | * | 17.4 |
| Baltimore, Md. | 16.2 | 4 | 20.2 |
| Washington, D. C.† | 18.0 | 2 | 20.0 |

*New Jersey road tax of 2c does not apply on aviation gasoline, exemption being claimed at time of purchase.

†Price at Washington is on Stanavo Aviation gasoline which sells at a ½c premium over "Standard" aviation gasoline.

#### COLONIAL BEACON OIL CO.

| | | | |
|---|---|---|---|
| New York City | 17.5 | 2 | 19.5 |
| Boston | 21 | 2 | 23 |

#### S. O. PENNSYLVANIA

| | | | |
|---|---|---|---|
| Philadelphia, Pa. | 18 | 3 | 21 |
| Pittsburgh, Pa. | 18 | 3 | 21 |
| Altoona, Pa. | 18 | 3 | 21 |

#### S. O. OHIO

| | | | |
|---|---|---|---|
| Thru Ohio | 16 | 4 | 20 |

Discounts given by S. O. Ohio: For airport delivery only; 2,000 gals. or over per month, 1c per gal.; 6,000 gals. or over per month, 2c; 12,000 gals. and over per month, 3c; 24,000 gals. and over per month, 4c.

#### S. O. INDIANA

| | | | |
|---|---|---|---|
| Chicago | 16 | 3 | 19 |
| Indianapolis, Ind. | 16.3 | 4 | 20.3 |
| Detroit, Mich. | 16.8 | 3 | 19.8 |
| Milwaukee, Wis. | 16.1 | 2 | 18.1 |
| Minneapolis, Minn. | 17.2 | 3 | 20.2 |
| St. Louis, Mo. | 15.4 | 2 | 17.4 |
| Kansas City, Mo. | 15.9 | 3 | 18.9 |
| Fargo, N. D. | 18.9 | 3 | 21.9 |
| Huron, S. D. | 17.3 | 4 | 21.3 |
| Wichita, Kan. | 14.8 | 3 | 17.8 |

In S. O. Indiana territory, buyer pays state and city taxes on aviation gasoline, and if he can get a refund from the state, he does so. Kansas City tax of 3c includes 1c city tax.

#### S. O. LOUISIANA

| | | | |
|---|---|---|---|
| New Orleans, La. | 17 | 6 | 23 |
| Nashville, Tenn. | 20 | 5 | 25 |
| Memphis, Tenn. | 19 | 5 | 24 |

2c per gal. discount off above t.w. prices to dealers and commercial consumers.

#### S. O. NEBRASKA

| | | | |
|---|---|---|---|
| Omaha | 16.25 | 4 | 20.25 |

2c per gal. refund to resellers.

#### CONTINENTAL OIL CO.

| | | | |
|---|---|---|---|
| *Denver, Col. | 15 | 4 | 19 |
| Cheyenne, Wyo. | 17 | 4 | 21 |
| Helena, Mont. | 23.5 | 5 | 28.5 |
| Salt Lake City, Utah | 19.5 | 3.5 | 23 |
| †Albuquerque, N. M. | 15 | 5 | 20 |
| Boise, Ida. | 21.5 | 5 | 26.5 |

*1c per gal. discount to dealers at Denver. †2c per gal. commercial discount is given off s.s. price a Albuquerque; disoount off t.w. price eliminated Sept. t

#### S. O. CALIFORNIA

| | | | |
|---|---|---|---|
| Phoenix, Ariz. | 17.5 | 4 | 21.5 |
| Los Angeles, Cal. | 16.5 | 3 | 19.5 |
| San Francisco, Cal. | 17 | 3 | 20 |
| Reno, Nev. | 21 | 4 | 25 |
| Portland, Ore. | 17.5 | 4 | 21.5 |
| Seattle, Wash. | 17.5 | 3 | 20.5 |
| Spokane, Wash. | 21.5 | 3 | 24.5 |

**Note:** 4c per gallon added to t.w. price, in S. O. California territory, to customers taking delivery direct into the fuel tank of planes.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# Crude Oil Prices (in Effect Dec. 15, 1930)

*Crude prices for the whole year in OIL PRICE HANDBOOK published annually*

### EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Bradford—Allegheny district (posted by Tide Water Pipe Co., Ltd.) (Effective Nov. 12, 1930) $2.15
Penna. Grade Oil in National Transit Lines (Effective Nov. 12, 1930) ..... *1.85
Penna. Grade Oil in Southwest Penna. Pipe Lines (Effective Nov. 12, 1930) ..... 1.80
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) (Effective Nov. 12, 1930).. 1.70
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) (Effective Nov. 12, 1930) .1.45
Wayne district crude in Cumberland lines (West Virginia) (Effective Oct. 29, 1930).. 0.97
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective Oct. 28, 1930)..... 1.25
Somerset Oil in Cumberland Pipe Lines (Kentucky) (Effective Oct. 29, 1930)..... 1.10
Somerset Oil in Eureka Pipe Lines (Effective Oct. 29, 1930)..... 0.94
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 9, 1929).....$0.60
*Oil run prior to July 1, 1929 is 5c less per bbl.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective Nov. 10, 1930).....$1.00

### MICHIGAN

(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon), effective Oct. 28, 1930, same gravity and price schedule as Prairie posts in Oklahoma and Kansas, which see below.

(Posted by Pure Oil Co.)

Midland, Midland County (Oct. 28, 1930)...$1.10

### CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective Oct. 28, 1930

| | | | |
|---|---|---|---|
| Wooster | $1.35 | Princeton | $1.30 |
| Lima | 1.10 | Illinois | 1.30 |
| Waterloo | 1.20 | Plymouth | 0.88 |
| Indiana | 0.87 | West Kentucky | 1.15 |

### CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Effective Oct. 28, 1930

Petrolia.....$1.50
Oil Springs..... 1.57

### OKLAHOMA, KANSAS and NORTH TEXAS

Prices of Prairie Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective Nov. 1, 1930

| | | | |
|---|---|---|---|
| Below 29 | $0.65 | 35-35.9 | $0.92 |
| 29-29.9 | 0.69 | 36-36.9 | 0.95 |
| 30-30.9 | 0.73 | 37-37.9 | 0.98 |
| 31-31.9 | 0.77 | 38-38.9 | 1.01 |
| 32-32.9 | 0.81 | 39-39.9 | 1.04 |
| 33-33.9 | 0.85 | 40 and above | 1.07 |
| 34-34.9 | 0.89 | | |

Oct. 25, Stanolind Crude Oil Purchasing Co. same schedule in Oklahoma-Kansas as Prairie. On Oct. 27, The Texas Co. met Prairie prices in Oklahoma, and on Oct. 28, in North Texas and North Central Texas.

Humble Oil & Refining Co. Prices

Effective Oct. 28, 1930

In Ranger, North Texas, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona fields, all in Texas, same prices as Prairie, which see above.

Magnolia Petroleum Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective Oct. 28, 1930

Magnolia posts same prices in all three states as Prairie, except these lower grades:

| | | | |
|---|---|---|---|
| Below 26 | $0.53 | 27-27.9 | $0.61 |
| 26-26.9 | 0.57 | 28-28.9 | 0.65 |

Effective Oct. 28, 1930

| | |
|---|---|
| Corsicana heavy | $0.75 |
| Luling | 0.75 |
| Mirando | 0.75 |
| Darst Creek, 60° and above | 0.90 |

### Carter Oil Co.

(Oklahoma and Kansas)

Oct. 27, 1930, same schedule as Prairie, which see above.

### PANHANDLE TEXAS

Humble Oil & Refining Co.

Effective Oct. 28, 1930

Hutchinson and Carson Counties:

| | | | |
|---|---|---|---|
| Below 29 | $0.45 | 35-35.9 | $0.72 |
| 29-29.9 | 0.49 | 36-36.9 | 0.75 |
| 30-30.9 | 0.53 | 37-37.9 | 0.78 |
| 31-31.9 | 0.57 | 38-38.9 | 0.81 |
| 32-32.9 | 0.61 | 39-39.9 | 0.84 |
| 33-35.9 | 0.65 | 40 and above | 0.87 |
| 34-34.9 | 0.69 | | |

Gray County:

| | | | |
|---|---|---|---|
| Below 29 | $0.50 | 35-35.9 | $0.77 |
| 29-29.9 | 0.54 | 36-36.9 | 0.80 |
| 30-30.9 | 0.58 | 37-37.9 | 0.83 |
| 31-31.9 | 0.62 | 38-38.9 | 0.86 |
| 32-32.9 | 0.66 | 39-39.9 | 0.89 |
| 33-33.9 | 0.70 | 40 and above | 0.92 |
| 34-34.9 | 0.74 | | |

Above prices met by Magnolia and The Texas Co. on Oct. 28 in Hutchinson, Carson and Gray counties.

Wheeler County: Posted by Magnolia Pet. Co. Effective Apr. 10. Humble withdrew Wheeler county postings Apr. 10.

| | | | |
|---|---|---|---|
| Below 30 | $0.755 | 37-37.9 | $1.11 |
| 30-30.9 | 0.805 | 38-38.9 | 1.145 |
| 31-31.9 | 0.855 | 39-39.9 | 1.18 |
| 32-32.9 | 0.905 | 40-40.9 | 1.215 |
| 33-33.9 | 0.955 | 41-41.9 | 1.25 |
| 34-34.9 | 1.005 | 42-42.9 | 1.285 |
| 35-35.9 | 1.04 | 43-43.9 | 1.32 |
| 36-36.9 | 1.075 | 44 and above | 1.355 |

### WEST TEXAS and NEW MEXICO

Humble Oil & Refining Co.

Effective Oct. 28, 1930

Crane, Upton, Crockett, Ector, Howard and Glasscock Counties, Tex., also Lea County, N. Mex.

| | | | |
|---|---|---|---|
| Below 25 | $0.50 | 31-31.9 | $0.64 |
| 25-25.9 | 0.52 | 32-32.9 | 0.66 |
| 26-26.9 | 0.54 | 33-33.9 | 0.68 |
| 27-27.9 | 0.56 | 34-34.9 | 0.70 |
| 28-28.9 | 0.58 | 35-35.9 | 0.72 |
| 29-29.9 | 0.60 | 36 and above | 0.74 |
| 30-30.9 | 0.62 | | |

Winkler and Pecos counties, Tex.:

Effective Oct. 28, 1930

| | | | |
|---|---|---|---|
| Below 25 | $0.55 | 31-31.9 | $0.69 |
| 25-25.9 | 0.57 | 32-32.9 | 0.71 |
| 26-26.9 | 0.59 | 33-33.9 | 0.73 |
| 27-27.9 | 0.61 | 34-34.9 | 0.75 |
| 28-28.9 | 0.63 | 35-35.9 | 0.77 |
| 29-29.9 | 0.65 | 36 and above | 0.79 |
| 30-30.9 | 0.67 | | |

Oct. 28, 1930, The Texas Co. same prices in Crane, Upton, Winkler and Lea counties as Humble.

Oct. 28, Magnolia same prices in Winkler, Crane, Upton, Howard, Glasscock and Mitchell counties.

### SOUTH and SOUTHWEST TEXAS

(Posted by Humble Oil & Refining Co.)

Effective Oct. 28, 1930

| | |
|---|---|
| Mirando | $0.75 |
| Salt Flat | 0.90 |
| Darst Creek | 0.90 |
| Pettus, Bee County | 1.10 |

### NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine, Cotton Valley, Sarepta and Carterville.

Effective Oct. 30, 1930

| | | | |
|---|---|---|---|
| Below 29 | $0.65 | 35-35.9 | $0.92 |
| 29-29.9 | 0.69 | 36-36.9 | 0.95 |
| 30-30.9 | 0.73 | 37-37.9 | 0.98 |
| 31-31.9 | 0.77 | 38-38.9 | 1.01 |
| 32-32.9 | 0.81 | 39-39.9 | 1.04 |
| 33-33.9 | 0.85 | 40 and above | 1.07 |
| 34-34.9 | 0.89 | | |

| | |
|---|---|
| Smackover, all grades | $0.70 |
| Bellevue (Oct. 30) | 1.00 |
| *Urania, La. (Oct. 30, 1930) | 0.75 |
| †East El Dorado (Calion) (Oct. 30) | 0.70 |

*Posted by Louisiana Oil Refining Corp.
†Posted by Magnolia Petroleum Co.

Oct. 28, 1930, The Texas Co. same schedule in Louisiana as Standard.

Oct. 30, Magnolia met Standard schedule in Louisiana-Arkansas fields except it posts the same low grades in La.-Ark. as in Mid-Continent.

### STEPHENS, ARKANSAS

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective Oct. 30, 1930

| | | | |
|---|---|---|---|
| Below 29 | $0.54 | 31-31.9 | $0.66 |
| 29-29.9 | 0.58 | 32 and above | 0.70 |
| 30-30.9 | 0.62 | | |

### GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective Oct. 28, 1930

| | | | |
|---|---|---|---|
| Grades A | $1.00 | 32-32.9 | $1.06 |
| Grades B: | | 33-33.9 | 1.08 |
| Below 25 | 0.75 | 34-34.9 | 1.10 |
| 25-25.9 | 0.92 | 35-35.9 | 1.12 |
| 26-26.9 | 0.94 | 36-36.9 | 1.14 |
| 27-27.9 | 0.96 | 37-37.9 | 1.16 |
| 28-28.9 | 0.98 | 38-38.9 | 1.18 |
| 29-29.9 | 1.00 | 39-39.9 | 1.20 |
| 30-30.9 | 1.02 | 40 and above | 1.22 |
| 31-31.9 | 1.04 | | |

On Oct. 28, The Texas Co. posted same prices on Grades A and B Gulf Coast crude as Humble.

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Humble, Pierce Junction, Sugarland, Refugio county, and Raccoon Bend. All other fields are Grades A only.

Specifications for Grade "A" crude: Gravity: 25° and below, at 60° F; Viscosity: not less than 100 seconds at 100° F. Saybolt.
Sulfur: not over .4%.

Grade "B" includes all Coastal crude which does not meet the test for "A" grades.

## Committee to Make New Forecast of Demand

NEW YORK, Dec. 15.—A committee of eight members of the general refining division of the American Petroleum Institute has been appointed to survey economic conditions which may be expected in the six-month period beginning April 1, 1930. The committee is expected to prepare a report for presentation at St. Louis, April 15-16 at the first semi-annual meeting of the division of refining.

The committee will prepare a forecast of the demand for gasoline during the period after the member from each major refining district confers with other manufacturers in the group. After the report is presented at an open session April 15 it will be made a subject for general discussion.

Members of the committee are: R. C. Holmes, The Texas Co., chairman; and the following representing various districts, Axtell J. Byles, Tide Water Associated Oil Co., for the East Coast; Charles L. Suhr, Pennzoil Co., for the Appalachian district; E. G. Seubert, Standard Oil Co. of Indiana, for Indiana-Illinois; E. B. Reeser, Barnsdall Oil Co., for Oklahoma-Kansas; E. T. Moore, Simms Oil Co., for Texas; T. H. Barton, Lion Oil & Refining Co., for Louisiana-Arkansas; T. A. Dines, Midwest Refining Co., for the Rocky Mountains; and K. B. Kingsbury, Standard Oil Co. of California, for California.

# *All gasoline is*

# DIVIDED *in* 2 *parts*

## 1. Straight Gasoline

ONE straight gasoline may have fewer impurities than another. It may be of lighter weight, or of lower initial boiling point. But the difference is a matter of degrec. It is due to the difference in crude oils and difference in refining methods.

The better gasoline is on each of these counts, the better it is as a motor fuel.

But straight gasoline, by itself, is not a perfect motor fuel. When compressed inside the cylinders of modern automobile motors, it has a tendency to "detonate": to burn unevenly in a white-hot heat that wastes power and causes knocking.

Automotive engineers sought a way to remedy this, and after seven years' research perfected the ingredient called *Ethyl fluid.* A few drops of this fluid control the combustion of an entire gallon of gasoline—make it Ethyl Gasoline.

## 2. ETHYL Gasoline

INSIDE the motor Ethyl Gasoline delivers power in smooth, even thrusts because Ethyl fluid controls the combustion of gasoline.

That's why Ethyl Gasoline gives greater power; and does it with less heat, less noise, and less wear and tear on the engine.

But Ethyl Gasoline is *more* than an anti-knock gasoline. It's the best motor fuel you can buy on every count. The 93 oil refining companies now selling Ethyl use only gasoline that's tested for purity, volatility and other qualities, and to this add Ethyl fluid in sufficient quantity to control combustion.

Thus you are always sure of quick-starting, high purity, and other qualities *in addition to controlled combustion* when you buy at the pump that bears the Ethyl emblem. Ethyl Gasoline Corporation, Chrysler Building, New York City.

ETHYL
BRAND OF ANTI-KNOCK COMPOUND
ETHYL GASOLINE CORPORATION
NEW YORK, U.S.A.
Knocks out that knock

The active ingredient used in Ethyl fluid is lead

# *All cars run better on*

# ETHYL GASOLINE

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# Crude Oil Prices (in Effect Dec. 15, 1930)

(Prices are per barrel at the well)

*(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)*

### ROCKY MOUNTAIN FIELDS

**Prices of Ohio Oil Co., and Midwest Refining Co.**

(Salt Creek prices effective Oct. 27, 1930)

| | | |
|---|---|---|
| Salt Creek | 29-29.9 | $0.69 |
| " " | 30-30.9 | 0.73 |
| " " | 31-31.9 | 0.77 |
| " " | 32-32.9 | 0.81 |
| " " | 33-33.9 | 0.85 |
| " " | 34-34.9 | 0.89 |
| ‡Salt Creek | 35-35.9 | $0.92 |
| " " | 36-36.9 | 0.95 |
| " " | 37 and above | 0.98 |
| Elk Basin | | 1.25 |
| Grass Creek light | | 1.25 |
| Big Muddy | | 1.00 |
| Lance Creek | | 1.33 |
| Rock Creek | | 1.01 |
| Mule Creek | | 1.20 |
| Rex Lake | | 1.10 |
| Pondera | | 1.45 |
| ‡Osage | | 0.85 |
| ‡Cat Creek, Mont. | | 1.25 |
| Sunburst, Mont. | | 1.55 |
| ‡Hogback, N. Mex. | | 1.40 |
| Artesia, N. Mex. | | 0.75 |

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

### CALIFORNIA

**Standard Oil Co. of California**

**(Effective Sept. 15, 1930)**

| Gravity | Signal Hill<br>Seal Beach<br>Alamitos Heights<br>Huntington Beach<br>Inglewood*<br>Olinda-Brea Canon* | Athens<br>Rosecrans<br>Dominguez | Elwood Terrace | Torrance<br>Richfield | Whittier<br>La Habra | Montebello | Coyote | Santa Fe Springs | Newhall<br>McKittrick<br>Kern River | Midway-Sunset<br>Elk Hills<br>Buena Vista Hills<br>Lost Hills | Coalinga | Wheeler Ridge | ‡Kettleman Hills | Orcutt (Santa Maria)<br>(Union Oil Co.) | Santa Paula<br>(Ventura) (Union Oil Co.) | Ventura Avenue<br>(Associated Oil Co.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-14.9** | $0.70 | .... | .... | $0.70 | $0.70 | $0.70 | $0.70 | .... | $0.55 | $0.55 | $0.55 | $0.55 | .... | $0.55 | $0.70 | $0.70 |
| 15-15.9 | .70 | .... | .... | .70 | .70 | .70 | .70 | .... | .55 | .55 | .55 | .55 | .... | .55 | .70 | .70 |
| 16-16.9 | .70 | .... | .... | .70 | .70 | .70 | .70 | .... | .55 | .55 | .55 | .55 | $1.65 | .55 | .70 | .70 |
| 17-17.9 | .70 | .... | .... | .70 | .70 | .70 | .70 | .... | .55 | .55 | .55 | .55 | for | .55 | .70 | .70 |
| 18-18.9 | .76 | .... | .... | .76 | .76 | .71 | .76 | .... | .55 | .62 | .62 | .62 | 55° | .65 | .75 | .76 |
| 19-19.9 | .82 | .... | .... | .82 | .82 | .77 | .82 | .... | .55 | .70 | .70 | .70 | gravity | .70 | .80 | .82 |
| 20-20.9 | .88 | .... | .... | .88 | .87 | .83 | .87 | .... | .... | .78 | .78 | .78 | and | .78 | .85 | .88 |
| 21-21.9 | .94 | .... | F.o.b. ships | .94 | .93 | .90 | .93 | $0.92 | .... | .86 | .86 | .86 | over | .90 | .90 | .91 |
| 22-22.9 | 1.00 | .... | .... | 1.00 | .98 | .97 | .98 | .95 | .... | .94 | .94 | .94 | .... | .95 | .97 | .94 |
| 23-23.9 | 1.07 | .... | .... | 1.07 | .... | 1.05 | 1.04 | 1.01 | .... | 1.02 | 1.02 | 1.02 | .... | 1.02 | 1.05 | 1.00 |
| 24-24.9 | 1.12 | 1.12 | .... | 1.12 | .... | 1.08 | 1.08 | 1.05 | .... | 1.06 | 1.04 | 1.04 | .... | 1.08 | 1.07 | 1.05 |
| 25-25.9 | 1.17 | 1.17 | .... | 1.17 | .... | 1.11 | 1.12 | 1.09 | .... | 1.10 | 1.06 | 1.06 | .... | 1.11 | 1.09 | 1.10 |
| 26-26.9 | 1.22 | 1.22 | .... | 1.22 | .... | 1.15 | 1.16 | 1.13 | .... | 1.14 | 1.08 | 1.08 | .... | 1.15 | 1.12 | 1.15 |
| 27-27.9 | 1.26 | 1.27 | .... | 1.26 | .... | 1.19 | 1.21 | 1.18 | .... | 1.18 | 1.11 | 1.10 | .... | .... | 1.16 | 1.19 |
| 28-28.9 | 1.30 | 1.32 | .... | 1.30 | .... | 1.23 | 1.25 | 1.23 | .... | 1.23 | 1.15 | .... | .... | .... | 1.20 | 1.23 |
| 29-29.9 | 1.34 | 1.37 | .... | †1.34 | .... | 1.26 | 1.29 | 1.28 | .... | 1.29 | 1.19 | .... | .... | .... | 1.24 | 1.27 |
| 30-30.9 | 1.38 | 1.42 | .... | †1.38 | .... | 1.29 | 1.33 | 1.33 | .... | 1.35 | 1.23 | .... | .... | .... | 1.29 | 1.31 |
| 31-31.9 | 1.43 | 1.47 | .... | .... | .... | .... | .... | 1.38 | .... | 1.41 | 1.27 | .... | .... | .... | 1.34 | 1.36 |
| 32-32.9 | 1.48 | 1.52 | .... | .... | .... | .... | .... | 1.43 | .... | 1.47 | 1.31 | .... | .... | .... | 1.40 | 1.41 |
| 33-33.9 | .... | 1.57 | .... | .... | .... | .... | .... | 1.48 | .... | 1.53 | 1.35 | .... | .... | .... | 1.46 | 1.47 |
| 34-34.9 | .... | 1.62 | 1.32 | .... | .... | .... | .... | 1.53 | .... | ††1.59 | 1.39 | .... | .... | .... | .... | 1.53 |
| 35-35.9 | .... | 1.66 | 1.39 | .... | .... | .... | .... | 1.58 | .... | ††1.65 | 1.43 | .... | .... | .... | .... | 1.59 |
| 36-36.9 | .... | 1.72 | 1.46 | .... | .... | .... | .... | 1.63 | .... | .... | .... | .... | .... | .... | .... | .... |
| 37-37.9 | .... | 1.78 | 1.53 | .... | .... | .... | .... | 1.68 | .... | .... | .... | .... | .... | .... | .... | .... |
| 38-38.9 | .... | 1.84 | 1.60 | .... | .... | .... | .... | 1.73 | .... | .... | .... | .... | .... | .... | .... | .... |
| 39-39.9 | .... | 1.90 | 1.66 | .... | .... | .... | .... | 1.78 | .... | .... | .... | .... | .... | .... | .... | .... |
| 40-40.9 | .... | 1.96 | 1.72 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 41-41.9 | .... | 2.02 | 1.78 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 42-42.9 | .... | 2.08 | 1.84 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |

*Inglewood prices run only to 28.9 gravity; Olinda-Brea Canon to 31.9 gravity.
†Richfield crude only. ††These two grades apply on Lost Hills only.
**Standard does not contract for crude testing below 14 gravity, but pays 45c per barrel when purchased.
‡Union Oil Co.'s prices on Kettleman Hills crude are, effective Sept. 15: 35-39.5, $1.10; 40-44.9, $1.20; 45-49.9, $1.35; 50-54.9, $1.50; and 55 and above $1.65.

# REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

### Refiners' Supplies

| | Dec. 15 | Dec. 8 |
|---|---|---|
| Soda Ash light 58% bags, cwt. | $1.32-1.55 | $1.32-1.55 |
| Silicate of Soda 60 deg. drums, ..... cwt. | $1.75-1.90 | $1.75-1.90 |
| Silicate of Soda 40 deg. tank cars ..... cwt. | $0.80 | $0.80 |
| Silicate of Soda 40 deg. drums, ..... cwt. | $1.05 | $1.05 |
| Sal Soda wks. ..... | $0.90-1.10 | $0.90-1.10 |
| Caustic Soda 76% solid, cwt. | $2.90 | $2.90 |
| Sulfuric Acid 60 deg. tank cars, f. o. b. shipping point per ton | $11.00-12.50 | $11.00-12.50 |
| Sulfur, flowers of.....cwt. | $3.10-4.00 | $3.10- 4.00 |
| Liquid Chlorine, tank cars, wks.....lb. | 2.00 | 2.40-2.45 |

### Compounders' Supplies

| | | |
|---|---|---|
| **Vegetable Oils** | | |
| Linseed carloads, spot....lb. | 9.20 | 9.40 |
| Tanks, spot..... | 8.60 | 8.80 |
| Soya Bean, Tank, coast..lb. | 7.50 | 7.50 |
| **Oleic Acid** | | |
| Distilled, tanks.....lb. | 7.75 | 7.75 |
| Distilled, bbls.....lb. | 8.625 | 8.625 |
| Saponified, tanks.....lb. | 7.75 | 7.75 |
| Saponified, bbls.....lb. | 8.625 | 8.625 |
| **Lard Oils** | | |
| Prime Winter Strained....lb. | 14.00 | 14.00 |
| Extra Winter Strained....lb. | 10.25 | 10.25 |
| Extra.....lb. | 9.75 | 9.75 |
| Extra No. 1.....lb. | 9.25 | 9.25 |
| No. 1.....lb. | 9.00 | 9.00 |
| No. 2.....lb. | 8.75 | 8.75 |
| Tallow oil.....lb. | 9.00 | 9.00 |
| **Neatsfoot Oil** | | |
| Pure, bbls.....lb. | 13.75 | 13.75 |
| Extra, bbls.....lb. | 9.50 | 9.50 |
| No. 1 bbls.....lb. | 9.25 | 9.25 |
| Cold Pressed.....lb. | 16.25 | 16.25 |
| **Fish Oils** | | |
| Menhaden Oil | | |
| Light Pressed.....gal. | 41-43 | 41-43 |
| Light Pressed, tank cars, N. Y.....gal. | 35-37 | 35-37 |
| Yellow bleached.....gal. | 38-41 | 38-41 |
| Whale, extra winter bleached, ..... gal. | 80 | 80 |
| **Naval Stores** | | |
| Steam, distilled turpentine, N. Y.....gal. | 41-42 | 41-42 |
| Steam distilled turpentine, Savannah .....gal. | 38 | 38 |
| Gum turpentine, N. Y...gal. | 41 | 41 |
| Gum turpentine, f.o.b. cars Savannah .....gal. | 36 | 38 |
| Wood Rosin, N. Y.....bbl. | $4.50 | $5.35 |
| Wood Rosin F, Savn'h...bbl. | $4.86 | $4.86 |
| Gum Rosin B, N. Y.....bbl. | $4.95 | $4.95 |
| Gum Rosin B, f. o. b. cars Savannah .....bbl. | $4.20 | $4.20 |
| Rosin oil, pure.....gal. | 56 | 56 |
| Rosin oil, compounded...gal. | 50 | 50 |
| **Pine Tar** | | |
| Kiln burnt.....bbl. | $13.00-14.00 | $13.00-14.00 |
| Retort..... bbl. | $13.50-14.50 | $13.50-14.50 |
| **Alcohol** | | |
| Denatured Formula 5, in bbls., per gal..... | 46-48 | 46-48 |

# Oil Stocks and Finances

## Rockefellers Reported to Be Out Of Five Standard Oil Units

NEW YORK, Dec. 12 ACCORDING to the *New York Times* the Rockefeller family and philanthropies have disposed of their stock interests in Standard Oil Co. of Kentucky, Standard Oil Co. of Kansas, Atlantic Refining Co., Prairie Oil & Gas Co. and Prairie Pipe Line Co.

The companies in which the Rockefellers have largely centered their interests are the Standard Oil Co. (N.J.), Standard Oil Co. of Indiana, Standard Oil Co. of New York, Standard Oil Co. of California and Vacuum Oil Co. Holdings are retained in Standard Oil Co. of Ohio, the original Standard Oil company, Ohio Oil Co., and several other members of the Standard Oil group.

The fact that the Rockefellers have withdrawn from the two Prairie companies is not new as the Rockefeller stock was obtained by a syndicate and then sold to the Petroleum Corp. of America, forming the Petroleum Corp.'s principal asset. It had been reported for more than a year that Rockefellers had sold their Atlantic Refining holdings but no announcement came from the Rockefeller interests or the Atlantic.

Wall Street, according to the *Times*, has interpreted the Rockefeller withdrawal from five companies as recognition of a trend toward larger, integrated companies.

"Also, it is believed," say the *Times*, "they prefer to have their oil investments confined to a smaller group of companies. It is pointed out that at the time of the dissolution of the old Standard Oil Co. in 1912 they had approximately one-fourth interest in 33 companies, representing all of the separate entities that were created by the dissolution decree. Since that time their holdings in the various companies have been shifted gradually. In scattering their investments in fields outside of the petroleum industry they disposed of some of their stocks in a number of the original Standard oil units.

"The Rockefeller stockholding interest is largest in the Standard of New Jersey, which is the keystone of the Standard oil group. Their original holdings in this company, amounting to nearly 25 per cent, are largely intact today. In this connection it is pointed out that the Jersey company has not exchanged its shares to any important extent in the acquisition of other properties, while other Standard oil companies have done so and in the process have lowered the ratio of the Rockefeller holdings in their total stock outstanding. The Rockefellers may have sold some Standard of New Jersey stock, but if they did so it was in large measure replaced by later purchases.

"Next to the Jersey company, the Standard oil units in which the Rockefellers are most interested are the Standard of Ohio, Ohio Oil, Standard of California, Standard of New York, Vacuum and Standard of Indiana. It was reported yesterday that representatives of John D. Rockefeller Jr. had acquired the stock holdings of Colonel Robert W. Stewart in the Standard of Indiana, but these reports were denied by persons acquainted with the status of that company's stock lists. It is possible that some additional Standard of Indiana stock may have been bought for the Rockefeller account, but Colonel Stewart, who was deposed as chairman of that company, is understood to be still a substantial stockholder."


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### Colonial Beacon Reports Loss

NEW YORK, Dec. 13.—Colonial Beacon Oil Co., controlled by Standard Oil Co. (N.J.), reports a deficit of $1,576,360 for the nine months ended Sept. 30, compared with a profit of $848,345 in the corresponding nine months of 1929. In the third quarter of this year the company lost $260,196, compared with a profit of $338,877 in the third quarter of 1929.

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NEW YORK, Dec. 13.—The market value of oil stocks listed on the New York Stock Exchange Dec. 1 was $4,427,576,524, a decline of $246,651,234, or a little more than 5 per cent.

## Report U. S. Companies Seek Two in Canada

TORONTO, Dec. 12.—The sharp upturn in prices of stock of McColl Frontenac Oil Co. and Supertest Petroleum Co. on the Toronto and Montreal stock exchanges has been accompanied by many rumors of offers of United States oil interests to buy these two companies.

Cities Service Co. is said to have bid for control of McColl Frontenac and Sinclair Consolidated Oil Corp. for Supertest.

The new Canadian tariff on gasoline and the tightening of regulations regarding the dumping of gasoline in Canada have influenced these moves, it is said. Considerable gasoline that formerly came into Canada duty free or at a low rate of duty has been shut out.

## Vacuum Gets Control Of Michigan Jobber

DETROIT, Dec. 12.—Moreland Oil Co. of Adrian has become affiliated with Vacuum Oil Co. Earlier this year the White Star Refining Co. of Detroit, one of the largest distributors of petroleum products in Michigan was absorbed by Vacuum.

The Moreland company was organized in Adrian in 1881 by Robert S. Moreland, J. H. Moreland and E. W. Crane. It was known then as Moreland Bros. & Crane.

The present officers are Robert T. Moreland, president and general manager; Karl B. Hoch, vice-president and treasurer; Fred L. Moreland, secretary, and W. B. Alexander, assistant secretary.

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*The Niagara Grease Meter is the positive displacement single piston meter. The same type that has proved its superiority in the famous Buffalo Gasoline Meter.*

TO match the modern style of the super-service station of today, and to make greasing equipment ornamental as well as useful, here is the time-proved Niagara Grease Meter in a new and modern dress. This new dress consists of a new and handsome outer casing, that will be a pride to any service station.

Mechanically, the Niagara Grease Meter is still the same reliable meter, with hair line accuracy, for measuring any grade of grease, and for hand, air or electric operation, at any speed. No change in adjustment is ever needed under any circumstances. It meets the standard specifications of the National Conference on Weights and Measurements, and has the approval of the Sealer of Weights and Measures in every state where approval is required.

The Niagara is the sturdiest Grease Meter you ever saw. It will withstand 500 pounds of pressure and any amount of abuse. It is the positive displacement, single piston meter, and mechanically the same type that has proved its superiority in the famous Buffalo Gasoline Meter. The large, honest dial face registers eight pints in one revolution of the hand, and the total register measures up to 100,000 pints, then repeats. Inlet for the grease is at the bottom of the meter, and the outlet is at the back.

Simplicity and quantity production make the cost of the Niagara Grease Meter remarkably low, and the new dress makes it the most attractive grease meter available. Write today for further information. Use the convenient coupon below. There is no obligation.

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2889 Main St., Buffalo, N. Y.

# NIAGARA Grease Meter

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Please send full information on the Niagara Grease Meter and quote prices.

*Individual*_____ *Firm Name*_____

*Street and No.*_____

*City*_____ *State*_____

# Transactions in Oil Shares on New York Stock Exchange

| 1929 High | 1929 Low | 1930 High | 1930 Low | Listed Shares | Par Value | Company | Div. Rate | Last Paid | Transactions Week Ending Dec. 13 Sales | First | High | Low | Last | Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42⅝ | 17½ | 42¼ | 18¾ | 922,075 | N.P. | Amerada Corp. | 50cQ | Oct. 31, 30 | 1,100 | 21¼ | 21¼ | †18¾ | 19 | — 2⅛ |
| 64¾ | 12½ | 37 | 5¼ | 209,180 | N.P. | American Republics Corp. | .... | ..... | 4,900 | 7½ | 8⅛ | †5¼ | 5⅜ | — 2⅜ |
| 47¼ | 34½ | 51 | 30⅞ | 2,240,000 | $25 | Associated Oil | 50cQ | Sept. 30, 30 | 40 | 35 | 35 | 35 | 35 | — 0 |
| 77⅞ | 30 | 51⅜ | 17⅝ | 2,683,868 | 25 | Atlantic Refining Co. | ‡25cQ | Sept. 15, 30 | 36,725 | 20⅛ | 20⅝ | †17⅝ | 17⅝ | — 2⅜ |
| 49⅝ | 20 | 34 | 10¼ | 2,257,108 | 25 | Barnsdall Corp. A | 50cQ | Nov. 6, 30 | 36,400 | 14¼ | 14¼ | †10¼ | 10⅞ | — 3½ |
| 34½ | 25 | 35 | 21 | 2,060,966 | 25 | California Petroleum Corp. | .... | Jan. 1, 29 | ..... | ..... | ..... | ..... | ..... | ..... |
| 32⅞ | 12½ | 20⅝ | 9¼ | 1,444,970 | N.P. | Colonial Beacon Oil Co. | .... | ..... | 8,400 | 10 | 10 | 9¼ | 9¼ | — ¾ |
| 37¾ | 18 | 30½ | 10 | 4,610,258 | N.P. | Continental Oil (Delaware) | .... | ..... | 53,900 | 11 | 11 | 10 | 10 | — 1 |
| 94¾ | 42¼ | 71⅛ | 26 | 410,857 | $100 | General Asphalt Co. | $1Q | Sept. 15, 30 | 5,100 | 28 | 29 | †26 | 26 | — 3¼ |
| 109 | 26 | 116⅞ | 33⅛ | 250,000 | 100 | Houston Oil | .... | ..... | 11,000 | 39½ | 40¼ | 34 | 34 | — 5⅝ |
| .. | .. | 10¼ | 7⅝ | ..... | .... | Houston Oil, new | .... | ..... | 14,600 | 9 | 9⅛ | 7¾ | 7¾ | — 1⅝ |
| 39⅜ | 17¾ | 32 | 11⅛ | 1,379,295 | N.P. | Independent Oil & Gas | 37½c | Oct. 2, 30 | ..... | .... | .... | .... | ..... | ..... |
| 53 | 13⅜ | 28⅜ | 3⅛ | 699,066 | 10 | Indian Refining | .... | Dec. 15, 20 | 29,600 | 4 | 4 | †3⅛ | 3⅛ | — ⅞ |
| 51¼ | 11½ | 27¾ | 4 | 568,816 | 10 | do certificates | .... | ..... | 100 | 4 | 4 | 4 | 4 | — ⅛ |
| 38⅜ | 16½ | 29½ | 21¼ | 3,994,150 | N.P. | Lago Oil & Transport | .... | Aug. 2, 27 | ..... | .... | .... | .... | ..... | ..... |
| 18 | 7 | 12 | 4⅜ | 1,187,701 | N.P. | Louisiana Oil Refining | .... | ..... | 50 | 5 | 5 | †4⅜ | 4⅜ | — ⅝ |
| 100¼ | 80 | 89½ | 78⅜ | 40,000 | $100 | do pfd. | $1.62½Q | Nov. 15, 30 | ..... | .... | .... | .... | ..... | ..... |
| 18½ | 5⅞ | 10⅜ | 2 | 330,000 | N.P. | Maracaibo Oil Exploration | .... | ..... | 1,300 | .... | 2¼ | 2 | 2 | — ⅝ |
| 295 | 176 | 182 | 150 | 459,428 | $100 | Mexican Petroleum | $3Q | Oct. 20, 30 | ..... | .... | .... | .... | ..... | ..... |
| 105 | 102 | .. | .. | 120,000 | 100 | do pfd. | $2Q | Oct. 20, 30 | ..... | .... | .... | .... | ..... | ..... |
| 69⅜ | 9¼ | 37 | 9¾ | 1,244,383 | N.P. | Mexican Seaboard Oil | .... | Oct. 15, 24 | 37,500 | 12⅛ | 12½ | 10 | 10¼ | — 2 |
| 39⅞ | 22⅛ | 33 | 13 | 1,899,138 | N.P. | Mid-Continent Petroleum | 50cQ | Nov, 15. 30 | 19,100 | 15⅞ | 15⅞ | †13 | 13 | — 3 |
| 3⅝ | ¾ | 2½ | ¾ | 908,171 | N.P. | Middle States Oil ctfs. | .... | ..... | ..... | .... | .... | .... | ..... | ..... |
| .. | .. | 32 | 16⅛ | 6,708,086 | N.P. | Ohio Oil Co. | 50cQ | Sept. 15, 30 | 26,300 | 18¼ | 18½ | 17 | 17¼ | — ⅞ |
| 69 | 40¼ | 64¼ | 42 | 1,000,000 | $50 | Pan American Petrol. & Trans. | .... | Oct. 20, 27 | ..... | .... | .... | .... | ..... | ..... |
| 69¼ | 40½ | 67½ | 41 | 2,422,221 | 50 | do B | .... | Oct. 20, 27 | 1,100 | 42 | 42 | 41 | 41 | — 2 |
| 15¼ | 3 | 12¾ | 1¾ | 199,370 | N.P. | Panhandle Prod. & Refg. | .... | ..... | 2,400 | 2 | 2¼ | 2 | 2 | — ¼ |
| 76 | 47½ | 80 | 47½ | 25,666 | $100 | do pfd. | .... | July 2, 23 | ..... | .... | .... | .... | ..... | ..... |
| .. | .. | 27½ | 8⅞ | 2,937,900 | N.P. | Petroleum Corp. of America | 37½cQ | Sept. 30, 30 | 134,200 | 10 | 10⅛ | †8⅞ | 8⅞ | — 1⅛ |
| 47 | 24¼ | 44¾ | 14½ | 2,670,089 | N.P. | Phillips Petroleum Co. | 50cQ | Oct. 2, 30 | 155,015 | 16½ | 16⅞ | †14½ | 14⅜ | — 2 |
| 3⅜ | 1 | 2½ | ⅝ | 1,184,917 | $25 | Pierce Oil Corp. | .... | ..... | 4,100 | ⅝ | ¾ | †⅝ | ⅝ | 0 |
| 51½ | 20 | 52 | 8⅛ | 150,000 | 100 | do pfd. | .... | Feb. 1, 22 | 1,800 | 9 | 10¼ | †8⅛ | 8½ | — 1⅜ |
| 5⅞ | ½ | 7⅛ | 2¼ | 2,500,000 | N.P. | Pierce Petroleum Corp. | 10c | Nov. 15, 30 | 4,000 | 2¾ | 2¾ | 2¼ | 2¼ | — ¼ |
| 65⅜ | 40½ | 54 | 13¾ | 2,435,670 | $25 | Prairie Oil & Gas Co. | 50cQ | Sept. 30, 30 | 15,200 | 17 | 17 | †13¾ | 14⅛ | — 2⅞ |
| 65 | 45 | 60 | 19½ | 4,050,000 | 25 | Prairie Pipe Line Co. | ‡75cQ | Sept. 30, 30 | 23,500 | 25 | 25¼ | †19⅛ | 19½ | — 5½ |
| 25⅞ | 4 | 31 | 1 | 749,017 | 50 | Producers & Refiners Corp. | .... | Sept. 15, 30 | 3,800 | 3½ | 3½ | †1 | 1 | — 2½ |
| 46¾ | 25½ | 38 | 13½ | 56,907 | 50 | do pfd. | .... | May 4, 25 | 710 | 15 | 15⅛ | †13½ | 13½ | — 1½ |
| 30¾ | 20 | 27¼ | 9¼ | 3,038,370 | 25 | Pure Oil Co. | 37½cQ | Sept. 1, 30 | 31,000 | 10½ | 10½ | †9¼ | 9⅜ | — ⅞ |
| 116 | 108 | 114¼ | 93½ | 130,000 | 100 | do 8% pfd. | $2Q | Oct. 1, 30 | 590 | 102¼ | 102½ | 93¾ | 94 | — 6¼ |
| 49⅝ | 22⅝ | 28¼ | 5⅝ | 2,891,735 | 25 | Richfield Oil (California) | 50cQ | Sept. 1, 30 | 14,700 | 7¼ | 7¼ | †5⅝ | 5⅝ | — 1⅞ |
| 42½ | 15 | 25¾ | 6½ | 1,235,270 | N.P. | Rio Grande Oil Co. | 50cQ | July 25, 30 | 12,200 | 7⅞ | 7⅞ | †6½ | 6½ | — 1⅜ |
| 64 | 43⅛ | 56½ | 37⅜ | 951,310 | $13.40 | Royal Dutch (N. Y. shares) | $1.875 | Aug. 13, 30 | 18,800 | 41¼ | 41¾ | 39¼ | 39¼ | — 1⅞ |
| 55⅜ | 43⅜ | 48⅜ | 32 | 77,492 | £2 | Shell Trans. & Trading | $1.453 | July 28, 30 | 540 | 32¼ | 32¼ | 32 | 32 | — 0 |
| 31¾ | 19 | 25½ | 7½ | 13,069,076 | N.P. | Shell Union Oil Corp. | 35cQ | June 30, 30 | 21,300 | 8⅜ | 8⅜ | 7½ | 7½ | — 1⅛ |
| .. | .. | 106¼ | 65½ | 400,000 | 100 | do pfd. | $1.37½Q | Oct. 1, 30 | 4,500 | 74 | 74 | 67 | 67 | — 4¾ |
| 40⅛ | 15 | 37 | 6 | 869,255 | 10 | Simms Petroleum Co. | 40cQ | June 14, 30 | 7,200 | 7½ | 7½ | †6 | 6 | — 1 |
| 45 | 21 | 32 | 10⅞ | 5,455,665 | N.P. | Sinclair Consolidated Oil Corp. | 50cQ | Oct. 15, 30 | 80,700 | 12¾ | 12¼ | †10⅞ | 10⅞ | — 1⅜ |
| 111 | 103 | 112¼ | 93 | 154,685 | 100 | do pfd. | $2Q | Nov. 15, 30 | 700 | .... | 96 | †93 | 93 | — 6 |
| 46½ | 42 | 42 | 10¼ | 1,097,650 | $25 | Skelly Oil Co. | 50cQ | Sept. 15, 30 | 20,400 | 12½ | 12½ | 10¾ | 10¾ | — 1¾ |
| .. | .. | 99¾ | 49 | 120,000 | 100 | do pfd. | $1.50Q | Nov. 1, 30 | 700 | 59½ | 59½ | †49 | 49 | —11 |
| .. | .. | 106 | 98 | 750,000 | 100 | S. O. Export Corp. pfd. | $2.50S.A. | June 30, 30 | 100 | 100½ | 100½ | 100½ | 100½ | — 1 |
| 81⅞ | 51½ | 75 | 43 | 13,016,434 | N.P. | S. O. California | 62½cQ | Sept. 15, 30 | 63,700 | 48⅝ | 49 | †43 | 43½ | — 5⅜ |
| .. | .. | 49 | 16½ | 320,000 | $25 | S. O. Kansas | 50cQ | Sept. 15, 30 | 4,000 | 18½ | 18¾ | †16½ | 16½ | — 1½ |
| 83 | 48 | 84⅞ | 49 | 25,443,643 | 25 | S. O. New Jersey | ‡25cQ | Sept. 15, 30 | 198,800 | 51⅝ | 52⅝ | 49⅛ | 49½ | — 2¾ |
| 48⅛ | 31¾ | 40⅜ | 22⅛ | 17,809,530 | 25 | S. O. New York | 40cQ | Sept. 15, 30 | 84,100 | 25 | 25⅛ | †22⅛ | 22¼ | — 3 |
| 86⅜ | 55 | 70 | 42 | 1,416,911 | N.P. | Sun Oil Co. | 25cQ | Sept. 15, 30 | 5,000 | 49 | 49 | †42 | 42 | — 7½ |
| 105½ | 100 | 107¾ | 98 | 100,000 | $100 | do pfd. | $1.50Q | Sept. 1, 30 | 240 | 103¾ | 103¾ | †98 | 98 | — 5½ |
| 24 | 5¼ | 9⅜ | 1 | 1,026,979 | N.P. | Superior Oil Corp. | .... | ..... | 3,800 | 1¼ | 1¼ | †1 | 1 | — ¼ |
| 71⅞ | 50 | 60½ | 32⅝ | 9,850,724 | $25 | The Texas Corp. | 75cQ | Oct. 1, 30 | 76,400 | 35½ | 36 | †32⅝ | 33 | — 2¾ |
| 23⅞ | 9½ | 14½ | 5½ | 929,947 | 10 | Texas Pacific Coal & Oil | ‡2½% | Dec. 31, 29 | ..... | .... | .... | .... | ..... | ..... |
| 23½ | 10 | 17¾ | 6¾ | 5,881,980 | N.P. | Tide Water Associated Oil | 30cS.A. | Aug. 15, 30 | 18,300 | 7¾ | 8 | †6¾ | 6¾ | — 1¼ |
| 90⅞ | 74⅛ | 89¾ | 65 | 732,550 | $100 | do pfd. | $1.50Q | Oct. 1, 30 | 1,300 | .... | 70 | †65 | 65 | — 3½ |
| 40 | 14 | 31 | 15⅛ | 2,191,820 | N.P. | Tide Water Oil Co. | 20cQ | Sept. 30, 30 | ..... | .... | .... | .... | ..... | ..... |
| 97½ | 85⅛ | 94⅞ | 77 | 199,443 | $100 | do pfd. | $1.25Q | Aug. 15, 30 | 1,000 | .... | 81 | †77 | 77 | — 4¼ |
| .. | .. | 24 | 12⅛ | 3,339,150 | N.P. | Transcontinental Oil | 30c | May 1, 30 | ..... | .... | .... | .... | ..... | ..... |
| 57 | 42⅛ | 50 | 20⅝ | 2,201,008 | $25 | Union Oil Co. (California) | ‡50cQ | Aug. 9, 30 | 20,600 | 25 | 25 | †20⅝ | 20¾ | — 4⅜ |
| .. | .. | 38½ | 24 | 1,254,048 | N.P. | Union Tank Car Co. | 40cQ | Dec. 1, 30 | 8,400 | 25⅛ | 25⅛ | 24⅛ | 24¼ | — ¾ |
| 42⅞ | 15 | 27 | 5½ | 777,603 | N.P. | Warner Quinlan Co. | 25cQ | July 3, 30 | 11,375 | 6 | 6 | †5½ | 5½ | — ½ |
| 38 | 25 | 29½ | 26 | 490,000 | N.P. | White Eagle Oil & Refg. | 50cQ | Apr. 20, 30 | ..... | .... | .... | .... | ..... | ..... |
| 29¾ | 12⅞ | 21 | 8⅛ | 428,967 | N.P. | Wilcox Oil & Gas Co. | .... | May 10, 28 | 1,900 | 10 | 10 | †8⅛ | 8⅛ | — 1⅞ |

*New high †New low ‡Also extra s-Stock Total sales 1,344,285

## Financial Notes

**Sun Oil Co.**—The 125,557 shares additional common stock listed on the New York Stock Exchange are to be used in payment of the 9 per cent stock dividend payable Dec. 15 to stock of Nov. 25 record.

**Transcontinental Oil Co.**—The 6½ per cent sinking fund first mortgage bonds of this company which was merged this year with Ohio Oil Co., have been called for redemption Jan. 1 at par and interest. The bonds that have unexercised stock warrants attached will receive a premium of 10 per cent of the bond principal. There were $11,082,000 principal amount of the bonds outstanding Aug. 15 of an original issue of $15,000,000.

TULSA, Dec. 13.—The 5 per cent stock dividend which Sunray Oil Co. is paying Jan. 15 to stock of Dec. 20 record is in lieu of the regular quarterly cash dividend of 10 cents a share.

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WASHINGTON, Dec. 13.—The Gulf Refining Co. has asked permission of congress to lay a pipeline from the water front here to its proposed bulk plant. Congressional approval is necessary as the line is to cross two streets, and all streets here are owned by the federal government.

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CHICAGO—Bert A. Gustafson, formerly with the Sun Oil Co. here, has been made sales manager of E. C. Mullen Co., compounder and marketer of lubricating oils and greases, Chicago.

## Pittsburgh Stock Exchange

**Transactions Week Ended Dec. 12, 1930**

| | Sales | High | Low | Last | Change |
|---|---|---|---|---|---|
| Ark. Gas | 250 | 6 | 5½ | 5⅞ | — ⅜ |
| do pfd | 368 | 7⅝ | 6⅝ | 6⅝ | —1 |
| Devonian Oil | 90 | 6½ | 6½ | 6½ | — ½ |
| †Leonard Oil | 1,000 | .50 | †.50 | .50 | —.50 |
| Lone Star | 9,531 | 24 | 23 | 23 | — ¾ |
| do pfd | 85 | 105 | 105 | 105 | 0 |
| †Phoenix Oil | 500 | .19 | †.19 | .19 | —.01 |
| †Pgh. Oil & Gas | 1,000 | 1⅝ | †1⅝ | 1⅝ | — ⅜ |
| †Plymouth Oil | 630 | 19¼ | †17¾ | 17¾ | —1¾ |
| Shamrock O & G. | 4,660 | 10⅞ | 10 | 10 | 0 |

†New low.

## Pittsburgh Curb Market

**Transactions Week Ended Dec. 12, 1930**

| | Sales | High | Low | Last | Change |
|---|---|---|---|---|---|
| Gulf Oil | 100 | 69 | 69 | 69 | —7 |

## Cleveland Stock Market

| Dec. 12, 1930 | Bid | Asked |
|---|---|---|
| Canfield Oil | .. | 113 |
| Fred G. Clark | 2 | 3 |
| National Refining | 19 | 19¾ |

## Checking Tire Stocks

(*Continued from Page* 88)

lower temperature to preserve the rubbers goods. A truck is in the tire and accessory delivery service.

The tires are purchased outright from the manufacturer, and put out on consignment to the retailers. To route the tires through the warehouse a simple but efficient card system was worked out.

When a shipment of tires and tubes is received it is checked and placed in the warehouse. For each tire and tube a card is made out in the office. This car is 5 by 8 inches, perforated in three sections. The same serial number, kind and size of tire or tube is on each section. On the two bottom sections is listed the wholesale price.

The card is then placed in a rack in the office. For each type and kind of tire and tube there is a separate compartment. The rack is similar to those used in railroad stations for time tables.

When the driver removes a tire or tube from the warehouse for delivery to a dealer he takes the corresponding card from the rack. The top section remains at the dealer's station with the tire. This section has space for the retail price and the name and address of the purchaser, and it is kept by the dealer.

The second and third sections are returned by the driver to the main office. The second section carries the name and address of the dealer and his signature as receiver of that tire or tube. On the back is an agreement that the dealer has received the goods on consignment from the Miller Tire Sales Co., and that a representative of the company has the right to enter the dealer's premises to check the stock.

This section is on file at the office. When the driver returns to the dealer's station he takes all cards for goods on consignment, checks the stock, and collects for any tires or tubes that have been sold.

The lower section of the card is sent to the accounting department as soon as the goods are delivered. This section shows who received the tire, when it was delivered, and when it was returned or sold.

The cards in the rack are indicative of the stock on hand. Thus, if there are five cards in a pocket for a certain size tube there should be five tubes of that size in the warehouse. Two colors are used, one indicating tubes, the other casings.

An accurate inventory of goods is kept by the accounting department as experience has shown that errors will be made in handling the cards but the rack permits a rough inventory in short notice.

The original cards were punched in the top section, and had a metal eye. This section was supposed to be attached with a string to the tire when it left the warehouse, and to retain this identity through the sales operation. If the driver left tubes number 530, 531 and 532 with a dealer on one trip and on returning, with the middle section for these three cards for reference, found no tire in stock carrying number 530 he was to collect for that tire.

Actually the cards were lost from the tire and this strict identity could not be retained. The latest type cards omits the hole. Now the dealer keeps his top section in his desk. The driver checks over the stock on each delivery, compares the result with his section of the cards, and those on file at the station, and collects for tires or tubes sold.

## Oil Trademarks For Copyright

**THE following are trademark applications pertinent to our field pending in the United States Patent office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. trademark specialists.**

**As an additional service feature to its readers, this journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of this Department, or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.**

"RIOCO." Ser. No. 300,542. Richfield Oil Co. of California, Los Angeles, Calif. For petroleum and products of petroleum with or without admixture of other materials for illuminating, heating, power, burning, etc.

"IT." Ser. No. 305,467. United Chemical Company, Iowa City, Iowa. For lubricating oils and lubricating greases.

"BULL DOG." Ser. No. 305,555. Indian Refining Company, Lawrenceville, Ill. For lubricating oils and greases.

"A AND P." Ser. No. 305,841. Atlantic and Pacific Oil Company, Detroit, Mich. For gasoline, lubricating oils and lubricating greases.

Representation of a drum, the top being of white and the bottom, red. Ser. No. 303,439. Handford, Inc. doing business as Quaker Seal Petroleum Company, Sioux City, Iowa. For lubricating oils and greases.

"BEVERLY HILL BILLIES." Ser. No. 303,971. MacMillan Petroleum Corporation, Los Angeles, Calif. For gasoline, kerosene, lubricating oil and greases.

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L. D. 136

# Standard Oil Stocks on New York Curb

| 1929 High | 1929 Low | 1930 High | 1930 Low | Outstanding Shares | Par Value | Companies | Div. Rate | Last Paid | Transactions Week Ended Dec. 13 Sales | First | High | Low | Last | Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18¾ | 13½ | 18½ | 12¼ | ..... | £1 | Anglo-Amer. Oil voting stk. ctfs.. | 36c | June 5, 29 | ..... | .... | .... | .... | .... | ..... |
| 17⅛ | 11 | 19 | 12 | ..... | £1 | do non-voting stk. ctfs..... | 36c | June 5, 29 | ..... | .... | .... | .... | .... | ..... |
| 2⅛ | ¾ | 1 | ⅜ | 500,000 | N.P. | Atlantic Lobos Oil..... | .... | ..... | ..... | .... | .... | .... | .... | ..... |
| 4⅛ | 1 | 1½ | ⅛ | 200,000 | $50 | do pfd..... | ..... | ..... | 200 | ¼ | ¼ | †⅛ | ⅛ | — ½ |
| 46½ | 25 | 25 | 11¼ | 40,000 | 25 | Borne Scrymser Co..... | $1S.A. | Oct. 15, 30 | 100 | 12⅞ | 12⅞ | 12⅞ | 12⅞ | + ⅞ |
| 74¼ | 55 | 69 | 42 | 200,000 | 50 | Buckeye Pipe Line Co..... | $1Q | Sept. 15, 30 | 300 | 43 | 43 | †42 | 42 | — 2 |
| 210 | 130 | 184⅞ | 100¼ | 120,000 | 25 | Chesebrough Mfg. Co..... | ‡$1Q | Sept. 30, 30 | 100 | 116 | 116 | 116 | 116 | — 9 |
| 11¾ | 5⅜ | 7¼ | 3⅛ | ..... | N.P. | Creole Petroleum Co..... | .... | ..... | 7,900 | 3¾ | 3⅞ | 3½ | 3⅝ | — ⅛ |
| 75¾ | 40 | 65¾ | 22 | 30,000 | $50 | Cumberland Pipe Line Co..... | $1Q | June 16, 30 | ..... | .... | .... | .... | .... | ..... |
| 70½ | 42 | 54¾ | 28¾ | 50,000 | 100 | Eureka Pipe Line Co..... | $1Q | Nov. 1, 30 | ..... | .... | .... | .... | .... | ..... |
| ... | ... | 6¾ | 2½ | 280,000 | N.P | Galena Oil Corp. w.i..... | .... | ..... | 100 | 3 | 3 | 3 | 3 | 0 |
| ... | ... | 37¼ | 26 | ..... | N.P. | General Petroleum Corp. w.i..... | .... | ..... | ..... | .... | .... | .... | .... | ..... |
| 128 | 74⅛ | 119 | 65¼ | 2,974,645 | $25 | Humble Oil & Refg. Co..... | ‡50cQ | Oct. 1, 30 | 14,000 | 67⅜ | 67¾ | †65¼ | 65¼ | — 2½ |
| 41 | 22 | 30 | 15⅞ | 26,490,741 | N.P. | Imperial Oil, Ltd..... | 12½cQ | Dec. 1, 30 | 8,000 | 17½ | 17⅝ | 16⅛ | 16⅛ | — 1¾ |
| 42⅛ | 26 | 41 | 16¼ | 300,000 | $10 | Indiana Pipe Line Co..... | 50cQ | Nov. 15, 30 | 1,000 | 20 | 20 | †16½ | 16¼ | — 3¾ |
| 29¾ | 15 | 24 | 13⅜ | 14,247,880 | N.P. | International Petroleum Co..... | 25c | June 16, 30 | 16,100 | 14⅝ | 14⅝ | 13¾ | 13¾ | — 1 |
| 25⅛ | 10½ | 22⅜ | 12¾ | 509,000 | $12½ | National Transit Co..... | 25cQ | June 16, 30 | 1,100 | 13⅜ | 13⅜ | †12¾ | 12¾ | — 1¼ |
| 17¾ | 10 | 21 | 10⅛ | 100,000 | 10 | New York Transit Co..... | 40cQ | Oct. 15, 30 | 500 | 13 | 15 | 12¾ | 15 | + ⅜ |
| 63 | 41 | 54 | 26½ | 40,000 | 50 | Northern Pipe Line Co..... | $2S.A. | July 1, 30 | 300 | 30 | 30 | 28⅝ | 28⅝ | — 1⅜ |
| 105¼ | 103¾ | 108 | 102⅞ | 600,000 | 100 | Ohio Oil pfd..... | $1.50Q | June 14, 30 | 600 | 102⅞ | 103 | †102⅞ | 103 | — ⅛ |
| 44½ | 18⅝ | 32 | 15 | 400,000 | 25 | Penn Mex. Fuel Co..... | $1 | May 20, 30 | 9,900 | 16½ | 16½ | †15 | 15 | — 1 |
| 50 | 29 | 33 | 5⅞ | 160,000 | 25 | Solar Refining Co..... | $1.25S.A. | Dec. 20, 29 | 800 | 6⅞ | 6⅞ | 6⅝ | 6⅝ | — ⅛ |
| 23½ | 13 | 20⅛ | 6¾ | 100,000 | 10 | Southern Pipe Line Co..... | $5 | Dec. 1, 30 | 400 | 10¼ | 10¼ | 10¼ | 10¼ | + ¼ |
| 60¼ | 35⅜ | 45⅞ | 19½ | 1,200,000 | 25 | South Penn Oil Co..... | 50cQ | Sept. 30, 30 | 4,200 | 22¼ | 22¼ | †19½ | 20 | — 2½ |
| 70 | 45 | 64 | 32½ | 35,000 | 50 | Southwest Pa. Pipe Lines..... | $1Q | Oct. 1, 30 | 50 | 34 | 34 | 34 | 34 | — 2 |
| 63 | 45 | 59⅞ | 33 | 16,850,587 | 25 | S. O. Indiana..... | 62½cQ | June 16, 30 | 73,500 | 36⅜ | 36¾ | †33 | 33⅛ | — 3⅝ |
| 46⅞ | 29 | 40½ | 20⅜ | 2,577,124 | 10 | S. O. Kentucky..... | 40cQ | June 30, 30 | 12,600 | 22⅜ | 22⅞ | 20½ | 20⅝ | — 2⅞ |
| 50¼ | 40 | 48⅞ | 35¼ | 188,159 | 25 | S. O. Nebraska..... | ‡62½cQ | June 20, 30 | 500 | 38⅛ | 38⅛ | 37½ | 37½ | — ¾ |
| 129 | 60 | 108½ | 43¼ | 560,000 | 25 | S. O. Ohio..... | 62½cQ | Oct. 1, 30 | 1,850 | 54½ | 54½ | †43¼ | 43¼ | — 8⅛ |
| .. | .. | .. | .. | 120,000 | 100 | do 5% pfd..... | ..... | ..... | 300 | 103⅛ | 103⅛ | 103 | 103 | — ½ |
| 124½ | 113½ | 122 | 115¼ | 70,000 | 100 | do 7% pfd..... | $1.75Q | Sept. 2, 30 | 70 | 115¼ | 115¼ | 115¼ | 115¼ | 0 |
| 18 | 5⅛ | 10 | 4 | 34,158 | 25 | Swan Finch Oil Corp..... | .... | Jan. 15, 29 | ..... | .... | .... | .... | .... | ..... |
| 133¾ | 75¾ | 97⅞ | 59⅛ | 5,139,887 | 25 | Vacuum Oil Co..... | $1Q | June 20, 30 | 17,600 | 63¼ | 63¼ | 59½ | 59½ | — 3¾ |

*New high †New low ‡Also extra

# Independent Oils on New York Curb

| 1929 High | 1929 Low | 1930 High | 1930 Low | Par Value | Companies | Transactions Week Ended Dec. 13 Sales | First | High | Low | Last | Change |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .72 | ⅛ | ⅜ | 1/16 | $1 | Amer. Contr. Oilfields | ..... | .... | .... | .... | .... | ..... |
| 8⅝ | 1⅞ | 4½ | ⅛ | 5 | Amer. Maracaibo.... | 6,700 | ⅞ | ⅞ | ⅞ | ¾ | — 1/16 |
| 4¾ | 1 | 1⅜ | 1⅛ | 10 | Argo Oil..... | ..... | .... | .... | .... | .... | ..... |
| 26 | 3¾ | 16⅜ | 5⅛ | N.P. | Arkansas Nat. Gas... | 5,700 | 6 | 6 | 5½ | 5⅝ | — ½ |
| 24¾ | 6½ | 16⅜ | 4⅜ | N.P. | do Class A..... | 3,600 | 6 | 6 | 5¼ | 5¼ | — 1¼ |
| 9 | 4 | 8⅛ | 6¾ | 10 | do pfd..... | 2,400 | 7½ | 7½ | †6¾ | 6¾ | — ¾ |
| 70 | 50 | 28½ | 13½ | N.P. | British American Oil.. | ..... | .... | .... | .... | .... | ..... |
| 4⅞ | ⅜ | 2¾ | ¾ | ¼ | Carib Syndicate..... | 900 | 1 | 1 | 1 | 1 | — 1/16 |
| 68½ | 20 | 44¼ | 16 | N.P. | Cities Service..... | 76,600 | 17¾ | 17⅞ | 16⅛ | 16⅛ | — 1⅞ |
| 99¼ | 84 | 93⅞ | 52 | 100 | do pfd..... | 2,600 | 88¾ | 88¾ | 86⅞ | 86⅞ | — 1⅞ |
| 9¼ | 8 | 9 | 7½ | 10 | do pref. B..... | 200 | 7½ | 7½ | 7½ | 7½ | 0 |
| 96 | 81 | 89⅞ | 80 | 100 | do pref. BB..... | ..... | .... | .... | .... | .... | ..... |
| 1½ | ¼ | 1/16 | ⅛ | 1 | Colombia Syndicate.. | 5,100 | 1/16 | 1/16 | ⅛ | ⅛ | — 1/16 |
| 15 | 3⅞ | 8¼ | 1¾ | N.P. | Colon Oil Corp..... | 2,700 | 2⅛ | 2⅛ | †1¾ | 1⅞ | — 1/16 |
| ..... | ..... | 21 | 5 | N.P. | Columbia Oil & Gas.. | 4,400 | 5⅝ | 6 | †5 | 5⅛ | — ⅛ |
| 11¼ | 2½ | 5⅞ | 2 | 10 | Consolidated Royalty. | 700 | 2½ | 2½ | 2½ | 2½ | 0 |
| 135 | 42 | 74¾ | 1¾ | N.P. | Cosden Oil Co..... | 1,900 | 3 | 3 | 2 | 2 | — 1¾ |
| 87 | 55 | 70 | 15½ | 100 | do pfd..... | ..... | .... | .... | .... | .... | ..... |
| 2½ | ¼ | 1 | ¼ | N.P. | Crown Central Pet... | 2,000 | ¾ | ¾ | ⅝ | ⅝ | — ¼ |
| 11⅛ | 4 | ... | ... | N.P. | Crystal Oil..... | ..... | .... | .... | .... | .... | ..... |
| 51⅛ | 51⅛ | ... | ... | 100 | do pfd..... | ..... | .... | .... | .... | .... | ..... |
| 26 | 6½ | 13½ | 4¾ | N.P. | Darby Petroleum.... | 400 | 4¾ | 5½ | 4⅜ | 4⅜ | — ⅜ |
| ... | ... | 21¾ | 21½ | N.P. | do new..... | ..... | .... | .... | .... | .... | ..... |
| 11 | 2 | 11 | 3 | N.P. | Derby Oil & Refg.... | 1,200 | 3¼ | 3⅜ | †3 | 3⅜ | — ¼ |
| 44 | 17 | 60 | 30 | N.P. | do pfd..... | ..... | .... | .... | .... | .... | ..... |
| .. | .. | 12 | 12 | 10 | Devonian Oil..... | ..... | .... | .... | .... | .... | ..... |
| 209 | 115 | 166⅞ | 63¼ | $25 | Gulf Oil Corp..... | 25,600 | 73¼ | 73¼ | †63¼ | 63⅜ | — 9⅜ |
| 7½ | 1⅛ | 4 | 2¼ | N.P. | Homaokla Oil..... | ..... | .... | .... | .... | .... | ..... |
| ... | ... | 47½ | 15¾ | N.P. | Indian Territory A... | 1,800 | 15¾ | 15¾ | †15¾ | 15¾ | — 2 |
| ... | ... | 53½ | 15⅞ | N.P. | do B..... | 500 | 17 | 17 | †15⅞ | 15⅞ | — 2⅜ |
| 2⅞ | ⅜ | 1¾ | ⅜ | 10 | Intercontinental Pet.. | 17,400 | ⅜ | ⅝ | ⅜ | 1/16 | + 1/16 |
| 3⅜ | 1¼ | 3 | 1⅛ | N.P. | Kirby Petroleum.... | ..... | .... | .... | .... | .... | ..... |
| 6⅛ | 1 | 4¾ | ¾ | N.P. | Leonard Oil & Dev.... | 1,900 | ⅜ | ¾ | ½ | ½ | — ¼ |
| 38⅛ | 18 | 29 | 6¼ | N.P. | Lion Oil Refg..... | 400 | 7½ | 7½ | 7⅜ | 7⅜ | — ⅛ |
| 67⅛ | 28 | 55⅞ | 20⅛ | N.P. | Lone Star Gas..... | 6,200 | 23 | 24 | 21¾ | 21¾ | — 1¾ |
| ... | ... | 31 | 5½ | $25 | MacMillan Petrol..... | ..... | .... | .... | .... | .... | ..... |
| 2⅞ | ¼ | ½ | ⅛ | 1 | Magdalena Synd..... | 1,000 | ⅛ | 1/16 | ⅛ | 1/16 | 0 |
| 38½ | 14 | 16 | 3 | N.P. | Margay Oil..... | 800 | 3⅝ | 4 | 3½ | 3½ | — ⅛ |
| 6⅜ | 2¼ | 7½ | 1¾ | N.P. | Mexico Ohio Oil..... | 800 | 1¾ | 1¾ | 1¾ | 1¾ | — ⅛ |
| ... | ... | 11⅞ | 2¼ | N.P. | Middle States A v.t.c. | 2,800 | 3 | 3⅜ | 3 | 3 | 0 |
| ... | ... | 6 | 1 | N.P. | do Class B v.t.c. | 1,200 | 1⅛ | 1⅛ | 1 | 1 | — ⅛ |
| 42 | 8 | 36¼ | 5¾ | 5 | Missouri-Kansas P.L. | 13,600 | 6⅜ | 6⅜ | †5¾ | 5¾ | — ⅛ |
| 1½ | ¼ | ¾ | ⅜ | 1 | Mountain & Gulf Oil.. | ..... | .... | .... | .... | .... | ..... |
| 22⅞ | 7 | 12⅛ | 5⅛ | 10 | Mountain Producers.. | 3,700 | 5¾ | 5¾ | †5⅛ | 5½ | — ⅛ |
| 43⅞ | 24 | 41⅜ | 21¼ | N.P. | Nat. Fuel Gas..... | 4,400 | 22⅝ | 23 | †21¼ | 22⅜ | — ⅜ |
| 5 | 2¼ | 3½ | 1¼ | $5 | New Bradford Oil.... | 500 | 1⅝ | 1⅝ | 1½ | 1½ | — ⅛ |
| 4⅜ | 3⅛ | 3⅛ | 2¼ | 10 | New England Fuel... | ..... | .... | .... | .... | .... | ..... |
| 24½ | 11⅜ | 16⅞ | 4 | 25 | N. Y. Pet. Royalty.... | 200 | 6 | 6 | 5 | 5 | — 2 |
| 18⅜ | 6⅜ | 11¼ | 3 | N.P. | North Central Texas | 900 | 3½ | 3½ | 3 | 3 | — ¾ |
| 19¼ | 8⅛ | 11⅜ | 4¾ | N.P. | Oilstocks Ltd. A..... | 100 | 4¾ | 4¾ | 4¾ | 4¾ | 0 |
| 18¼ | 8½ | 11½ | 5 | N.P. | do B..... | 4,000 | 5⅛ | 5⅛ | 5 | 5⅛ | — ⅛ |
| 26⅛ | 12⅛ | 19½ | 8 | N.P. | Pacific Western Oil... | 3,600 | 9 | 9⅛ | †8 | 8⅜ | — 1¼ |
| 3½ | ½ | 2½ | ¼ | N.P. | Pandem Oil..... | 8,200 | ¼ | 1/16 | ¼ | ¼ | 0 |
| 10½ | 2¼ | 4⅜ | 1¼ | N.P. | Pantepec Oil..... | 700 | 1⅜ | 1⅜ | †1¼ | 1⅜ | 0 |
| 25½ | 13⅛ | 15 | 13⅛ | $25 | Paragon Refg. B. ctfs. | ..... | .... | .... | .... | .... | ..... |
| 28 | 17 | 29 | 19⅜ | N.P. | Petroleum Corp..... | ..... | .... | .... | .... | .... | ..... |
| ... | ... | 5⅞ | 1 | ... | do warrants..... | 1,200 | 1⅛ | 1⅛ | 1 | 1 | — ⅛ |
| 37 | 22 | 27½ | 17¾ | N.P. | Plymouth Oil..... | 2,600 | 19 | 19 | †17¾ | 17¾ | — 1⅜ |
| 16 | 9 | 10½ | 3½ | $5 | Red Bank Oil..... | 500 | 4⅝ | 4⅝ | †3½ | 3½ | — ½ |
| 8½ | 1⅛ | 5⅜ | 1⅛ | N.P. | Reiter-Foster Oil..... | 1,050 | 1¼ | 1⅜ | †1⅛ | 1¼ | — ⅛ |
| 25¼ | 19 | 23½ | 8½ | 25 | Richfield Oil pfd..... | 600 | 9¾ | 10⅝ | †8¼ | 8½ | — 4½ |
| 29 | 13 | 25 | 2¼ | N.P. | Root Refining pr. pfd. | 200 | 3 | 3 | 2⅝ | 2⅝ | — ⅛ |
| 11 | 3 | 8⅝ | 2 | N.P. | Ryan Consolidated... | 1,100 | 2½ | 2½ | 2⅛ | 2⅛ | — ⅜ |
| 5⅞ | 1⅞ | 2½ | 1⅜ | 10 | Salt Creek Consol..... | 1,500 | 1½ | 1½ | 1½ | 1½ | — ¼ |
| 25⅞ | 9 | 15¼ | 5¼ | 10 | Salt Creek Producers . | 5,600 | 6¾ | 6¾ | 6 | 6 | — ¾ |
| 33⅛ | 10 | 8 | 1¾ | 25 | Shreveport El Dorado | 500 | 2⅛ | 2⅛ | 2⅛ | 2⅛ | + ⅛ |
| ... | ... | 39⅛ | 39 | 25 | Signal Oil & Gas A... | ..... | .... | .... | .... | .... | ..... |
| 24 | 9 | 17 | 6 | N.P. | Southland Royalty... | 4,400 | 7 | 7 | †6 | 6⅛ | — ⅛ |
| 12 | 4 | 10 | 2⅝ | 5 | Sunray Oil..... | 10,800 | 2⅞ | 3⅜ | 2⅝ | 3 | + ⅛ |
| 23 | 7⅛ | 19½ | 8⅛ | N.P. | Texon Oil & Land.... | 500 | 11½ | 11½ | 11 | 11 | — 1⅜ |
| 81⅛ | 8⅞ | 16 | 8 | 10 | Venezuela Mexico..... | ..... | .... | .... | .... | .... | ..... |
| 6½ | 1⅛ | 4½ | 1 | 5 | Venezuela Petroleum. | 8,100 | 1⅛ | 1⅛ | †1 | 1 | — ⅛ |
| 9⅛ | 2 | 5 | 2 | 1 | Woodley Petroleum.. | ..... | .... | .... | .... | .... | ..... |
| 5⅜ | ¼ | 2½ | ⅜ | N.P. | Y Oil & Gas..... | 900 | ½ | ½ | ½ | ½ | — ¼ |

*New High. †New Low.

# New York Bonds

Week Ending Dec. 12

| | High | Low | Last | Change |
|---|---|---|---|---|
| Assoc. Oil Gold 6s ..... | 103 | 102½ | 102½ | — ¼ |
| Atlantic Refg. deb. 5s... | 101½ | 100¾ | 101 | —1½ |
| Cal. Pet. 5s..... | 97¼ | 96½ | 96½ | — ⅞ |
| Cal. Pet. 5½s..... | 101 | 100¾ | 100¾ | — ¼ |
| General Pet. 5s..... | 102⅝ | 102½ | 102½ | 0 |
| Humble Oil & Refg. 5s.. | 101½ | 100¾ | 100¾ | 0 |
| Humble Oil & Refg. 5½s | 102¾ | 102¼ | 102¾ | + ¼ |
| Pan Amer. P & T 6s.... | 102 | 101¾ | 101¾ | — ⅛ |
| Pan Amer. P & T 6s.... | 75 | 70 | 74½ | —3⅞ |
| Phillips Pet. 5¼s..... | 88¾ | 83 | 83 | —8 |
| Pierce Oil deb. 8s..... | 105 | 103 | 103 | 0 |
| Pure Oil 5½s..... | 95 | 94 | 94 | —1 |
| Pure Oil 5½s..... | 92½ | 88 | 88¼ | —4¾ |
| Richfield Oil Calif. 6s.... | 75 | 65 | 65 | —10 |
| Shell Union Oil 5s..... | 81¾ | 81 | 72½ | —9¼ |
| Shell Union Oil 5s with war. | 83⅛ | 73 | 73 | —10 |
| Sinclair Con. Oil 7s..... | 101 | 98¾ | 99 | —1¼ |
| Sinclair Con. Oil 6½s.... | 99¼ | 94⅛ | 95 | —4⅛ |
| Sinclair Con. Crude 5½s. | 101½ | 99½ | 100 | —1½ |
| Sinclair Pipeline..... | 100 | 99⅜ | 99⅞ | — ⅜ |
| Skelly Oil 5½s..... | 81⅝ | 79¾ | 81 | —1½ |
| S. O. N. J. 5½s..... | 104 | 102½ | 102½ | —1⅛ |
| S. O. N. Y. 4½s..... | 99⅞ | 97½ | 98¾ | — ⅞ |
| Transcontinental Oil 6½s war..... | 110¼ | 109⅞ | 109⅞ | — ¼ |
| Transcontinental Oil 6½s Ex-war..... | 100 | 100 | 100 | — ¼ |
| Union Oil of Calif. 6s A.. | 106½ | 106½ | 106½ | 0 |
| Union Oil of Calif. 5s C.. | 100¾ | 100⅜ | 100¾ | + ⅜ |
| Union Oil of Calif. 5s war. | 96¾ | 95 | 95 | —2 |
| Warner-Quinlan 6s..... | 54 | 53 | 53 | —1 |
| White Eagle Oil 5½s war. | 102¼ | 102 | 102 | — ¾ |

# New York Curb Bonds

Week Ending Dec. 12

| | High | Low | Last | Change |
|---|---|---|---|---|
| Beacon Oil 6s '36..... | 99 | 98½ | 98½ | + ½ |
| Cities Serv. 5s '66..... | 78 | 72½ | 72½ | —5½ |
| Cities Serv. 5s '50..... | 79⅛ | 72⅞ | 72⅞ | —6½ |
| Cities Serv. G. 5½s '42.. | 85¼ | 83½ | 83½ | —1¾ |
| Cities Serv. G. P. 6s '43.. | 92⅛ | 90¼ | 90¼ | — ¾ |
| Cont. Oil 5½s '37..... | 93 | 92½ | 92⅝ | — ⅜ |
| Empire O & R 5½s '42.. | 83¾ | 80 | 81 | —2⅞ |
| Gulf Oil 5s '37..... | 101½ | 100⅝ | 100⅝ | — ⅞ |
| Gulf Oil 5s '47..... | 102 | 99 | 99 | —3½ |
| Indep. Oil 6s '39..... | 99 | 94 | 94 | —5¼ |
| Sun Oil 5½s '89..... | 101½ | 101½ | 101½ | 0 |
| Valvoline Oil 7s '37..... | 99½ | 99½ | 99½ | 0 |

# Oil Dividends

| | Amount | Payable | Stock of Record |
|---|---|---|---|
| British American Oil q... | 25c | Jan. 2 | Dec. 15 |
| Gulf Oil q..... | 37½c | Jan. 1 | Dec. 20 |
| Mexican Petroleum q.... | $3 | Jan. 20 | Dec. 31 |
| do pfd. q..... | $2 | Jan. 20 | Dec. 31 |
| Moreland Oil B q..... | 15c | Dec. 31 | Dec. 15 |
| do extra..... | 5c | Dec. 31 | Dec. 15 |
| Mountain Prod. q..... | 40c | Jan. 2 | Dec. 15 |
| Plymouth Oil q..... | 50c | Dec. 30 | Dec. 16 |
| Sunray Oil stock..... | 5% | Jan. 15 | Dec. 20 |